

DEC Scraps Upgrade Plan or Decsystems

By Ed Scannell

CW Staff

ST. LOUIS — Digital Equipment Corp. has decided to scrap a two-year-old project to develop high-end systems that would offer an upgrade path for its Decsystem-10 and 20 computer users. Instead, the firm will offer ways to tie the 36-bit computer systems into its 32-bit VAX-11 superminicomputer line.

That announcement was made here last week by the company at its annual Decus users group meeting. Despite the firm's insistence that it is not abandoning the Decsystem products or customers, most users at the meeting were surprised and disappointed by the decision, a company spokesman said.

Code-named "Jupiter," the project promised to produce systems compatible with but four to five times faster than the Decsystem family of

mainframes. However, DEC apparently decided to abandon the Decsystem 36-bit architecture — inherited from the firm's earlier PDP-10 minicomputer — since all of DEC's currently produced systems incorporate either 16-bit or 32-bit architectures.

Instead, DEC reportedly plans to develop ways to tie the 36-bit Decsystems into 32-bit VAX-11 superminicomputers via DEC's "interconnect cluster concept," which it has been espousing for more than a year, as well as its Xerox Corp. Ethernet local-area network product.

There are currently about 1,500 Decsystem-10 and 20 users worldwide, according to International Data Corp. of Framingham, Mass. At last week's users group meeting, DEC officials attempted to allay any fears of abandonment Decsystem users might feel by saying the com-

(Continued on Page 10)

COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Weekly Newspaper

Second-class postage paid at Framingham, Mass. and additional mailing offices ©1983 by CW Communications/Inc.

\$1.50 a copy; \$44/year

May 30, 1983

Vol. XVII, No. 22

Packwood Set To Sponsor Bill Covering Bypass

By Phil Hirsch

CW Washington Bureau

WASHINGTON, D.C. — Companies that bypass their local telephone networks will still have to help subsidize those networks if a new U.S. Senate communications bill is enacted in its presently proposed form.

Details of the measure, which will be formally introduced in the Senate late next month, were revealed here last week at a press conference called by its sponsor, Sen. Bob Packwood (R-Ore.), chairman of the Senate Commerce Committee.

Although the Federal Communications Commission's new access charging plan requires long-distance carriers to subsidize local exchange operations through contributions to a "universal service fund," Packwood said he is concerned that this will not keep local telephone rates, particularly for rural residential customers, from rising. Growing use of bypass technology by major companies exacerbates the problem, he ex-

(Continued on Page 8)

House Votes to Repeal 'Withholding at Source' Measure

By Jake Kirchner

CW Washington Bureau

WASHINGTON, D.C. — The U.S. House of Representatives voted recently to repeal the controversial tax regulations that require financial institutions and corporations to withhold 10% of customers' interest and dividend payments. The bill now goes to the Senate, which previously approved a four-year delay on the withholding measure.

President Reagan has threatened to veto any legislation repealing the controversial "withholding at the source" regulation, part of the 1982 Tax Equity and Fiscal Responsibility Act. Reagan did not immediately comment on the 382-41 vote in the House, which took place May 17, noting during a press conference that the House might compromise with the Senate bill, which he sees as the lesser of two evils.

Senate support for its own delay legislation, however, has

waned in the face of complaints from the private sector that reporting requirements in the Senate measure would be as burdensome as the original withholding provision. In preparation for the withholding provision, many large financial institutions and corporations have spent millions of dollars in reprogramming, customer notification and the printing of necessary forms.

In the meantime, the July 1 withholding implementation date nears, forcing companies to complete preparations for the 10% withholding requirement. Some firms have complained that if repeal goes through at this late date, they will be unable to recoup their preparation costs through increased customer charges.

However, spokesmen for the banking industry, which is spearheading the repeal movement, argue that repeal still is economically preferable to implementing the regulation.

New CPUs Replace HP 3000 Trio

By Ed Scannell

CW Staff

PALO ALTO, Calif. — Hewlett-Packard Co. last week replaced three members in its HP 3000 series family with systems that are reportedly 20% to 100% faster and capable of supporting more terminals than their predecessors.

At the same time, the firm also introduced the fifth and latest version of its MPE operating system, designed to run on the three processors.

The new computers include the 3000 Series 68, which is said to be 30% to 100% faster than and replaces the Series 64; the mid-range Series 48, which offers 20% to 30% more processing power than the obsolete Series 44; and the low-end Series 42, which is reportedly 20% to 30% faster than its precursor, the Series 40. All three systems are said to be software-compatible with other members in the HP 3000 family.

The Series 42, 48 and 68 are expected to compete for market share against systems made by IBM, ranging from the System/38 to "almost all of the top of the 4341 line," a spokesman said. However, benchmarks comparing HP's systems against IBM's were not available at press time.

Described by an HP spokesman as a distributed mainframe, the 32-bit Series 68 holds up to 8M bytes of main memory and can support up to 400 terminals, 336 of which can be point-to-point. The system can also accommodate up to 24 disk drives, for a storage capacity of 9.5G bytes of data, and can handle 24 intelligent network processors.

(Continued on Page 4)

IBI Meeting Held in Havana Last Week

Third World Discusses High-Tech Crisis

By Jake Kirchner

CW Washington Bureau

HAVANA, Cuba — Representatives of three dozen nations, most of them from the Third World, met here last week to address what they see as a crisis in their high-technology development.

The crisis, according to the Rome-based Intergovernmental Bureau for Informatics, the meeting's sponsor, is the failure of developing countries to apply data processing and telecommunications technologies to facili-

tate economic and social development.

With most of the developing world still locked in the economic doldrums from which the industrialized nations are just now emerging, the IBI sees the already significant high-technology disparity between the two sectors as likely to increase in the near future, further exacerbating the Third World's developmental problems.

In addition, according to many of the approximately 300 participants at

last week's meeting, the advent of expensive but powerful microelectronics offers poorer nations the chance to leapfrog several generations of computer development and become full participants in the information age in a relatively short time. These nations see informatics — the combination of data processing, telecommunications, information services and other related technologies — as vital to the development of almost all sectors of individual coun-

(Continued on Page 6)



TM reg. U.S. Pat. Off.
 Editor John C. Whitmarsh
 Managing Editor Rita Shoor
 News Editor Cheryl M. Gelb
 Technical Editor Timothy J. Scannell
 Senior Editors:
 Software Lois Pal
 Communications Phil Hirsch
 Jim Bartimo
 Systems Ed Scannell
 Office Automation Bill Bartimo
 Industry George Harrar
 Features Susan Blakeney
 International Editor Marguerite Zientara
 Writer/Analysts Tom Henkel
 Senior Writer Paul Gillin
 Staff Writers Katherine Hafner
 Patricia Keefe
 Correspondents:
 New York Bob Johnson
 Washington, D.C. Jake Kirchner
 West Coast Robert Batt
 Jeffery Beeler
 Features Coordinator Barbara Van Scoyoc
 Chief Copy Editor Donovan White
 Assistant Chief Copy Editor:
 Editor Kathie Gow
 Copy Editors Dave Bouffard
 Bruce Crane
 Patti Hartigan
 Betsy Morse
 Deborah Scaduto
 Thomas Schmidt
 Charlotte Ziems

Assistant to the Editor June Fetting
 Editorial Assistants Joyce Furr
 Mary DeCristoforo
 Contributors:
 Education J. Daniel Couger
 Human Connection Jack Stone
 Lecht on Science Charles P. Lecht
 Software Werner L. Frank
 SPECIAL PUBLICATIONS
 Computerworld Extra! Editor Bruce Hoard
 Computerworld On Communications Editor Bruce Hoard
 Computerworld OA Editor Ann Dooley
 Staff Writer Glenn Rifkin
 Copy Editor Nancy Fleming
 Computerworld Buyer's Guides Editor Marcia Blumenthal
 Copy Editor Rick LePage

Please address all correspondence to the appropriate department at Box 880, 375 Cochituate Road, Framingham, Mass. 01701. Phone: (617) 879-0700. Telex: 95-1153.

OTHER EDITORIAL OFFICES
 & SALES OFFICES:
 New York: Suite 7C, 401 East 80th St., New York, N.Y. 10021. Phone: (212) 570-2135.

West Coast: 257 Lytton Ave., Palo Alto, Calif. 94301. Phone: (415) 328-8064.
 Washington, D.C.: 880 National Press Building, 529 14th St. N.W., Washington, D.C. 20045. Phone: (202) 347-6718.

England: Bill Dunlop, Stephen Thomas, Beers Hahn Assoc., 345 Gower Rd., Islington, London EC1V 4HN. Phone: 01274 341519.
 W. Germany: Eckhard Updehl, CW Publikationen, Friedrichstrasse 31, 8000 Munich 40. Phone: (089) 34-90-61. Telex: 5213350.

France: Axel Leblond, Le Monde Informatique, 42, Avenue Montaigne, 75008 Paris. Phone: 720.85.66.
 Japan: Mr. Shobun Kurita, Computerworld Japan, 7-4 Shunmori 1-Chome, Chuo-ku, Tokyo 104. Phone: (03) 551-3882. Telex: 252-4217. Etsun H. Yamada, Tokyo Representative Corp., Yamaguchi Bldg., 2-12, Kanda, Jinbocho, Chiyoda-ku, Tokyo 102. Phone: (03) 230-4179. Telex: 126460.

Australia: Alan Power, Computerworld Pty. Ltd., 37-43 Alexander Street, Crows Nest, NSW 2065. Phone: (02) 4395133. Telex: SECCO A22468.

Brazil: Eric Hippou, Data News, Computerworld do Brasil, Servicos e Publicacoes Ltda., Rua Alexandre Gusmão, 25/10th Floor 20031 Rio de Janeiro, RJ Brazil. Phone: (021) 240-4225. Telex: 213083RWBORD BR.

Mexico: Richard Small, Computerworld de Mexico, Casaca 21-2, Colonia Roma, Mexico City 7 D.F. Phone: (055) 514-4218. (055) 514-6309. Telex: 1771300 ACHAME. 1777889 ACHAME.

Spain: Neil Kelley, Computerworld/España, Gavina, 13, Madrid 4. Phone: 231-23-45, 231-23-46, 231-23-48. Telex: 479416C1.

Denmark: Preben Engell, Computerworld/Denmark, Gammlø Strand 50, 1202 Copenhagen K. Phone: 01-1234-11. Telex: 27564 cudan.

Sweden: Bengt Maresfeldt, Computerworld/Sweden, Nova Media AB, Varvsgatan 55, 11358 Stockholm.
 Italy: Daniele Combi, Gruppo Editoriale Jackson, s.r.l., Via Rosolini 12, 20124 Milano.

Second-class postage paid at Framingham, Mass., and additional mailing offices. Postmaster: Computerworld (ISSN: 0893-4811) is published weekly, except February (5 issues), April (5 issues), May (6 issues), June (5 issues), August (7 issues), September (5 issues), October (7 issues), November (5 issues), December (4 issues) and a single combined issue for the last week in December and the first week in January by CW Communications, Inc., Box 880, 375 Cochituate Road, Framingham, Mass. 01701.

Copyright 1983 by CW Communications, Inc. All rights reserved.
 PHOTOCOPY RIGHTS: permission to photocopy for internal or personal use, or the internal or personal use of specific clients is granted by CW Communications for libraries and other users registered with the Copyright Clearance Center (CCC), provided that the base fee of \$3.00 per copy of the article, plus \$0.50 per page is paid directly to Copyright Clearance Center, 21 Congress Street, Salem, MA 01970.

Permission to photocopy does not extend to contributed articles followed by this symbol: .
 Special requests should be addressed to Nancy M. Shannon, CW Communications, Inc., Box 880, 375 Cochituate Rd., Framingham, MA 01701. ISSN 0893-4811/82 \$3.00 + \$0.50. \$1.50 a copy. U.S. — \$44 a year. Canada, Central & S. America — \$110 a year. Europe — \$165 a year. All other countries — \$245 a year (airmail service). Four weeks notice is required for change of address. Please allow six weeks for new subscription service to begin.

POSTMASTER: Send Form 3579 (Change of Address) to Computerworld, Circulation Dept., Box 880, 375 Cochituate Road, Framingham, Mass. 01701.

Professor Files Lawsuit Over Altos 8000-7

LOS ANGELES — Claiming that the abilities of his Altos Computer Systems, Inc. Model ACS 8000-7 system were misrepresented, a professor at the University of California at Los Angeles (UCLA) has filed a \$4.1 million lawsuit against Altos and the consulting firm that recommended the system.

John W. Buckley's suit against Altos and Thorpe Datasystems, Inc. maintains that Buckley relied on advertisements published by Altos and the professional recommendation of Robert Thorpe, a principal of Thorpe

Datasystems. According to the complaint, the ACS 8000-7 was represented as a multiuser system that can accommodate four simultaneous users with a usable random-access memory (RAM) of 208K bytes and a variety of available software applications.

However, a press release issued under the letterhead of Buckley's Los Angeles law firm of Romney, Golant, Martin, Disner & Ashen maintained that the RAM portion of the memory of the ACS 8000-7 is "divided into four distinct segments of only 48K bytes each, which cannot be combined and which individually are each inadequate to permit any useful programming applications."

Furthermore, the press release

claimed that some of the advertised software packages, including Micropro International Corp.'s Wordstar word processing package, can be used by no more than one Altos user at a time.

The complaint charges the defendants with fraudulent inducement, breach of warranty, breach of contract and negligence. It seeks \$100,000 in actual damages and punitive damages of \$2 million against Altos on one count and \$2 million against all the defendants on a second count, derived from what is charged by the complaint to be the fraudulent and bad faith conduct of the defendants.

Altos refused to comment on the case.

Correction

In last week's article spotlighting Datapro Research Corp.'s annual user survey of minicomputers and small business systems [CW, May 23], *Computerworld* reported that Basic Four Information Systems Division of Management Assistance, Inc. took top honors in the systems poll in terms of overall user satisfaction. In fact, Microdata Corp. should have been listed as the overall winner in the report with a rating of 3.65 out of a possible 4.0, while Basic Four finished in 12th place with a 3.18 rating.

The reporting error has been traced to a series of preliminary summary charts supplied to *Computerworld* by Datapro in which the research firm inadvertently switched the figures attributed to both Microdata and Basic Four. The preliminary charts, which did not appear in *Computerworld*, wrongly showed Basic Four as the clear winner. All other results in the charts appear to be accurate.

Computerworld regrets the error and any confusion to our readers caused by the inaccurate information.

Micro Magazine Publisher Merges With CW Communications

Wayne Green, Inc., publisher of five magazines for the personal computer field, has reached an agreement to merge with CW Communications/Inc. (CWCI). The transaction is valued at \$60 million.

Based in Peterborough, N.H., Wayne Green, Inc. publishes *Microcomputing* magazine, *Desktop Computing*, *80-Micro* for Radio Shack computer users, *Incider* for Apple Computer, Inc. Apple users and *Hotcoco* for Radio Shack color computer users. Several of these publications are available in magnetic diskette versions.

The company also has published more than 40 books on the personal computer field.

CW Communications/Inc., Framingham, Mass., publishes *Com-*

puterworld newspaper and 22 other computer-related publications in 18 countries.

"The personal computer field is the fast-growing part of the high-tech industry," Patrick J. McGovern, chairman of the board of CWCI, said. "We're proud to have the publications of Wayne Green, Inc. as part of our global publication family."

"Together, we'll be the largest computer publishers in the world," Wayne Green, owner of Wayne Green, Inc., stated. "Our combined strengths will allow us to grow as rapidly as the microcomputing world."

Green added that "we are planning a 300% growth this year, beginning with a new magazine in January."

This Week

IN DEPTH

Micro Learning Curve Page 35

NEWS

Microdata Settles Suit Filed by Express X Users 4
 Senate OKs Bill Embodying Worker ID System 5
 IBI Projects Include Cuban Packet-Switching Net 6
 New Pillsbury Exec Tells How to Rise to Top 7
 Decision to Scrap Jupiter Disappoints Users 10
 AT&T to Greene: Loop Access Rates Won't Rise 11
 U.S. to Increase Talks on Communications 12
 Panel Hears Testimony on Effects of Automation 13
 Canada to Fund Micro Development in Schools 14
 Some Fear Canadian Plan to Delay Micro Spread 15
 NTSB Asks FAA to Expand ATC Safety Plan 16
 Users View Workstations as Productivity Aids 17
 Combination of DSS, Micros Seen Cost Cutter 18
 Hotel Group Learns to Control Rampaging DSS 19
 Exec to-Mainframe Links Seen All-Important 20
 Businesses to Value Networking, Analyst Says 22
 Exec Finds Few Risks With Reusable Code 24
 Speaker Advocates 'Human Side' of Staffing 25
 Integration Seen Best Bet in Financial Systems 26
 U.S. Seen in Danger of Losing Top Spot 28
 Exec Explains Bank's Steps to Up Productivity 30
 Systems Development Change Seen Inevitable 31
 Aiken Portrayed as Uncompromising, Energetic 33
 New Class of Information Analysts Predicted 34

EDITORIAL

Editorial: Putting an End to Big Brother 44

Lecht on Science: U.S. vs. IBM: Legal Mess 45
 Human Connection: Successful Micro Marketing 45

SOFTWARE & SERVICES

End-User Computing Facility Aids Insurer 47
 IBM-Compatible Analyzer Boosted 48
 M. Bryce Unveils Pride-ASDM Addition 49
 Processor Targets Liberator 52

COMMUNICATIONS

LM Ericsson Renames Firm, Offers Products 53

SYSTEMS & PERIPHERALS

State-of-the-Art Recording Unwrapped 59
 IBM Unwraps 4245 Band Printer 60
 Graphics Yet to Make Corporate Splash: Survey 61

OFFICE AUTOMATION

Lisa Rated High in Price/Performance 63

COMPUTER INDUSTRY

Martin Marietta to Purchase Mathematica 67
 IBM Suing Ex-Employee for Tech Theft, Venture 67
 Chief Rates Creativity, Skill Keys to Success 68
 Vendors See Economy on Upswing 69
 Datapoint, Rockwell Drop Out of PBX Mart 71
 Xerox Signs Support Pact 74
 HP Reports Strong Second-Quarter Gains 75

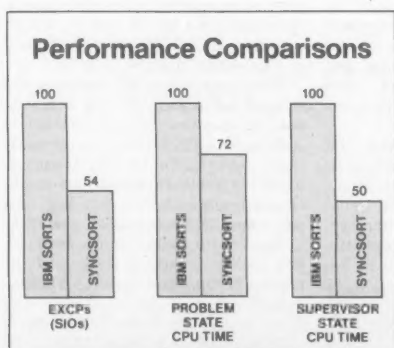
ADVERTISING INDEX 98

OSCARs

In 1982 SyncSort won four awards "for best performance in a sorting role."

Call (201) 568-9700.

Join the world's largest sorting fan club.



syncsort
INC.

Syncsort Incorporated 560 Sylvan Ave., Englewood Cliffs, N.J. 07632

My, how things have changed! Just a few years ago, SyncSort was a stagestruck young sort program hoping to be discovered by a tall, handsome, leading-edge processor who would put our name up there in lights.

Now, a bare ten years later, we stand before millions of sort fans, with tears of gratitude in our eyes, clutching four golden statuettes emblematic of success:

(1) The Most Popular Sort Program according to IDC:

In its million-dollar extravaganza—the 6th Annual Survey of Sort Programs Used in an IBM OS and OS/VS Environment—IDC found that SyncSort is now used by 75% of America's major data processors. Only 19% still use the sort programs of our major competitor, a company called—let's see—IBM.

(2) One of the Top Two Software Products according to Datapro:

Only two software products were awarded top honors in Datapro's 1982 "User Ratings of Proprietary Software." SyncSort was one of those products.

(3) One of the Top Four Software Products according to Datamation:

Datamation's "1982 Systems Software Survey," conducted by Data Decisions, gave top honors to a select group of four software products. SyncSort was one of them, with 71% of those polled rating its performance "outstanding."

(4) 48 out of 50 of the Top Names on the Fortune 500 use SyncSort:

Only two of the fifty largest industrial companies in the U.S. do not use SyncSort. And one of them is our large competitor.

Why has SyncSort become perhaps the world's most popular software product, with over 6,500 users? There are three important reasons:

• TOP PERFORMANCE.

All three versions of SyncSort, OS, DOS and CMS, are old sorting pro's. They simply do more sorting work for fewer computer resources than any other sort programs available today, as the charts illustrate.

• TOP PRODUCTIVITY.

SyncSort is the programmer's best friend. Using advanced SyncSort features, the amount of time required for a simple report can often be reduced from five programmer days to one.

• TOP SERVICE.

Our Technical Service is by far the best in the sorting field. Any SyncSort user can count on fast, expert, courteous sorting advice. Over 85% of all customer requests are resolved within 24 hours.

If you'd like a personal introduction to the First Lady of the Sorting Stage, give us a call and we'll trot her over for a friendly meeting. Why wait outside the stage door in the cold?

Microdata Settles Suit Filed by Express X Users

By Jeffrey Beeler

CW West Coast Bureau

PORTLAND, Ore. — Microdata Corp. has reached an out-of-court settlement with two customer companies that had sued the vendor for fraud and breach of expressed warranty.

Under the settlement, Contact Lumber Co. and Call Systems, Inc. have agreed to drop their two-year-old civil suit against Microdata on the condition that the vendor pay the plaintiffs \$150,000 in damages. Microdata has also agreed to provide the two user firms with "certain other considerations, which will remain confidential," according to the plaintiffs' legal counsel, Micah Stowit.

A decision to settle the \$600,000 lawsuit came on the evening of May 18, one day before the case was scheduled to go to trial, he said.

Both Contact Lumber and Call

Systems declined to comment on the settlement's terms or possible implications, according to their attorney, a member of the area law firm of Haugh and Foote.

Also refusing comment was Microdata's lawyer in the case, Barry Laubscher, who referred all inquiries to Henry Kohlmann, the company's general counsel. Kohlmann was reportedly traveling last week and was unavailable for an interview.

Ended a Legal Battle

The settlement ended a legal battle that began in July 1981 when the two user organizations sued Microdata for selling them three minicomputer systems that the vendor allegedly "knew" were unable to operate as advertised, Stowit said.

Filed here in U.S. District Court, the suit accused Microdata of supplying Contact Lumber and Call Sys-

tems with three Express X configurations whose hardware and Emos operating systems were said to be defective and seriously incomplete.

"In the computer industry, it's not unusual for companies to market new products before they are fully developed," Stowit said. "But in the case involving Contact Lumber and Call Systems, the development of the products was a long way from completion."

In theory, Emos was supposed to support multiple users at the same time. But the two plaintiffs said they soon discovered the performance claims were greatly exaggerated. "Emos could run OK with one user and could run slowly with two users, but that was about the extent of the operating system's support capabilities," Stowit said.

The control program also suffered from numerous unexplained crashes and was marred by file integrity problems, according to Stowit. "Emos was losing data and often updated one file into the wrong file," he said.

Contact Lumber and Call Systems began using the control program in 1977. Roughly two years later, Microdata ceased all its Emos development efforts.

Stowit cited a sworn deposition in which a software official with the Irvine, Calif.-based vendor reportedly described Emos as only 50% to 70% complete when it was finally killed in 1979.

Other problems, meanwhile, apparently plagued the users' Microdata hardware. By about 1980, the plaintiffs had replaced their Express X hardware with newer Express III equipment.

In the end, the Microdata systems were scrapped in favor of a rival configuration from Data General Corp., Stowit said.

The combination of hardware and control program problems roughly doubled Call Systems' expected program development costs, slowed its compile times and resulted in lost files, the attorney added.

Call Systems is a locally headquartered consulting/application programming firm, one of whose clients is Contact Lumber, which was also reportedly harmed by its Express and Emos performance problems.

As compensation for their alleged injuries, the two user companies sought damages covering their application development, support and maintenance costs, the last of which reportedly totaled \$500 to \$600/mo.

Three R&D Firms Seal Pact To Develop Supercomputer

MENLO PARK, Calif. — Three major research organizations have announced they will work together over the next decade to develop a supercomputer capable of performing calculations 1,000 times faster than current high-speed number crunchers from such companies as Cray Research, Inc. and Control Data Corp.

The Lawrence Livermore Laboratory, the Los Alamos National Laboratory and SRI International, Inc. have joined forces to form the Supercomputer Project Research Experiment for Access and Development (Spread). In addition to the long-term goal of creating an advanced supercomputer, Spread will put prototype experimental supercomputers said to be 100 times faster than those now available onto a network that scientists in the research field can access, according to a spokesman.

"The idea is to make the supercomputer available to the research community at large," according to Franklin Kuo, executive director of the Center for Intelligent Computer

Systems at SRI here.

The network will provide wide-band satellite service of 1.5M bit/sec to handle the high output of the supercomputers. Among the advanced computers placed on the network will be the Digital Equipment Corp. 784, which is a "four-headed VAX," according to Kuo.

The project is scheduled to be up and running by mid-1984 if funding goes well. Part of its goal is to combat the Japanese threat of technological domination, according to SRI.

"The Japanese supercomputer program is well-organized and well-funded," an SRI spokesman said. "It poses a threat to U.S. technical superiority."

Among the uses for the supercomputers under development are weather prediction and nuclear physics, but the wait for current technology is still long. "There are 60 high-speed computers currently on order from Cray and CDC," according to Jim Kloss, SRI Journal editor.

HP 3000 Family, MPE Updated

(Continued from Page 1)

Aimed at small and medium-size businesses, the Series 48 contains 4M bytes of internal memory and handles as many as 152 terminals simultaneously, 104 of which can be point-to-point. Up to 16 disk drives, storing up to 4.2G bytes of data, can be attached to the Series 48 and up to seven intelligent networking nodes.

The low-end Series 42 is being targeted at smaller businesses or as part of a distributed network in larger organizations, the company said. The system features 3M bytes of main memory, enabling it to support 92 terminals, eight disk drives holding 3.2G bytes of information and three intelligent network processors.

HP attributes all three systems' increased throughput, faster response times and ability to support more terminals to a disk cache feature and improvements incorporated into MPE-V, the latest version of its operating system.

According to a spokesman, the disk cache feature speeds throughput rates and response times by eliminating the need for data to be transferred from disk to main memory. The cache reportedly anticipates the code and data most likely to be re-

quested by applications in progress, holds it in main memory as space allows and checks to see if there are any duplications of information before going back to the disk.

MPE-V reportedly supports the concurrent running of more applications than previous versions and allows users to configure more terminals and other peripherals through the extension of its operating system tables. The system has the potential to support up to 400 sessions and 24 disk drives, according to the company.

The operating system is compatible with all systems in the HP 3000 computer line, the spokesman noted. The disk cache feature and MPE-V are also compatible with HP's recently released Series 39 system, which competes with IBM's System/34 and the just-announced System/36.

The basic Series 68 includes 3M bytes of main memory, a system console, 12 terminal ports, a 404M-byte disk and a 1,600 bit/in. tape drive. It is priced at \$245,614. The system is available in either one- or two-bay I/O configurations. The two-bay unit provides a 50% increase in overall I/O bandwidth, which improves a user's ability to access disks and increases throughput speed, a spokesman noted.

Price of the basic Series 48 is \$109,500 and consists of 2M bytes of main memory, a system console, four terminal ports, a 132M-byte disk and a 1,600 bit/in. magnetic tape drive.

The stripped-down version of the Series 42 lists for \$72,400 and contains 1M byte of internal memory, a system console, four terminal ports, a 132M-byte disk and 1,600 bit/in. magnetic tape drive.

First deliveries of all three systems are scheduled for September, the vendor said from 3000 Hanover St., Palo Alto, Calif. 94304.



The HP 3000 Series 68

ADR will make two major announcements in the next several months covering:

1. ADR's mainframe software and the Personal Computer.
2. A major software product to dramatically reduce the applications backlog.

The importance of these announcements will be directly disproportionate to the size of this ad.

**APPLIED DATA
RESEARCH**

Route 206 E Orchard Rd., CN-8, Princeton, NJ 08540

Sparks Civil Liberties Concern

Senate OKs Bill Embodying Worker ID System

By Jake Kirchner

CW Washington Bureau

WASHINGTON, D.C. — The U.S. Senate has approved broad immigration reform legislation that, among other things, directs the president to develop a secure worker identification system, a system criticized by its opponents as a de facto national identification system.

At the heart of the ID controversy of the Immigration Reform and Control Act is the bill's provision making employers liable for hiring aliens not permitted to work in this country. Supporters of the ID provision argued employers could not be responsible for judging who is legally eligible to work unless there is an adequate identification system employers can check.

The eligibility verification provision initially would allow employers to ask for U.S. passports or a combination of documents, such as birth certificates, Social Security cards and drivers licenses. The legislation, approved by the Senate May 18 on a 76-18 vote, but still several months away from consideration by the House of Representatives, directs the president to develop, within three years of the bill's enactment, a "secure system to determine employment eligibility."

It is this mandate that has raised concerns of civil liberties advocates both in and outside Congress. They argue that any national system will be large, expensive, unreliable and so tempting to other government agencies that there will be inevitable attempts to use it for a variety of purposes unrelated to employment [CW, Aug. 30].

They compare it with Social Security numbers, once limited in use, but which now are used for numerous licensing and identification purposes.

Supporters of the immigration bill, however, scoff at that contention. The Senate Judiciary Committee issued a report on the legislation last month that said, "the committee

does not believe that the system being proposed involves any form of a step toward loss of civil liberties."

As to cost, the committee said a worker eligibility verification system utilizing employer telephone calls to a government data bank would average \$333 million per year for the first five years and about \$200 million per year thereafter. The committee argued that this cost would be more than offset by reduced government unemployment benefits since the bill would theoretically decrease the joblessness that is caused by illegal aliens taking the jobs of eligible workers.

The committee pointed to the

"specific safeguards" in the bill — such as a prohibition against using the eventual system for any other purpose or requiring the cards be carried — as minimizing "the risk of undue invasion of privacy and the risk of government abuse."

The report continued, "The committee is most emphatically not requiring or permitting the development of an 'internal passport' or 'national ID card.'"

But opponents of the measure remained unconvinced, particularly Sen. Alan Cranston (D-Calif.), who led Senate opposition to the ID provision.

During debate on the bill, Cran-

ston argued against what he called this "expensive, dangerous provision that would require every person in the U.S. to have some form of authorization by his or her government in order to work. That is a major step toward a police state," he said, adding, "there is no justification for such a drastic program."

The provision was criticized, though not so strongly, by several other legislators. Sen. Mark O. Hatfield (R-Ore.) praised the bill's safeguard language, but successfully offered an amendment that would give Congress veto power over whatever ID system is eventually recommended by the president.

FREE.

GET ED YOURDON'S LATEST BOOK,
MANAGING THE SYSTEM LIFE CYCLE, FREE WITH YOUR ORDER
OF \$100 OR MORE FROM THE LIST BELOW.

**EDWARD
YOURDON
MANAGING
THE SYSTEM
LIFE CYCLE**

**A
SOFTWARE DEVELOPMENT
METHODOLOGY OVERVIEW**

Use Ed Yourdon's DP expertise to help you organize, manage, and control a software development project. Check coupon for details.

☐ Enclosed is \$29.75 for each copy of *Controlling Software Projects*, by T. DeMarco.

☐ Enclosed is \$18.25 for each copy of *The Data Factory: Data Center Operations & Systems Development*, by E. Roeske.

☐ Enclosed is \$28.75 for each copy of *Practical Guide to Structured Systems Design*, by M. Page-Jones.

☐ Enclosed is \$28.75 for each copy of *Structured Analysis and System Specification*, by T. DeMarco.

☐ Enclosed is \$28.25 for each copy of *Software Design: Methods & Techniques*, by L. Peters.

☐ Enclosed is \$34.75 for each copy of *Classics in Software Engineering*, Ed. by E. Yourdon.

☐ Enclosed is \$19.75 for each copy of *The Politics of Projects*, by R. Block.

☐ Enclosed is \$43.75 for each copy of *Developing Structured Systems*, by B. Dickinson.

☐ Enclosed is \$30.25 for each set of *Learning to Program in Structured COBOL, Parts 1 & 2*, by E. Yourdon et al.

☐ Please send me your latest Catalog.

☐ Please add me to your Mailing List.

OFFER GOOD THROUGH JUNE 30, 1983.
COUPON MUST BE INCLUDED WITH ORDER.

SHIPPING INFORMATION: Specify quantity per title. Prices include \$1.25 per book for shipping & handling. Residents of CA, NY & WA states, add applicable sales tax. Orders must be prepaid in U.S. funds. Or charge your order on ☐ VISA or ☐ MASTERCARD.

CARD NO.

SIGNATURE

EXPIRATION DATE

NAME

COMPANY

BUSINESS ☐ OR HOME ☐ ST.

CITY

STATE

ZIP

BUSINESS ☐ OR HOME ☐ PHONE ()

YOURDON PRESS, DEPT. CW5/30/83, 1133 AVENUE OF THE AMERICAS, N.Y., NY 10036

Design Meet To Hear Mark

CHICAGO — The Illinois Institute of Technology (IIT) computer design conference here June 23-25 will have Hans Mark, deputy administrator of the National Aeronautics and Space Administration (Nasa), as its keynote speaker.

Mark's speech on "Computers and the Exploration of Space" will describe the intensive application of computers to space exploration, ranging from their use in the design of spacecraft to their importance in the launch of spacecraft in space.

The conference is sponsored by IIT's Institute of Design and the School of Advanced Studies.

The conference registration fee is \$325 for the general public, \$285 for members of the National Computer Graphics Association, \$185 for college faculty and \$80 for students. More information is available from the IIT Center, Chicago, Ill. 60616.

IBI Projects Include Cuban Packet-Switching Net

By Jake Kirchner

CW Washington Bureau

HAVANA, Cuba — With speeches and diplomatic flourish, Cuban and Spanish representatives signed an agreement here last week to develop jointly a packet-switching telecommunications network for Cuba.

The agreement marked the initiation of just one of many such international projects the Intergovernmental Bureau for Informatics (IBI) sought to promote at its gathering here for some 300 people from three dozen, primarily Third World, nations.

Another project, already under way with the coordination of the Rome-based IBI, involves Symag of Grenoble, France, which is transferring its microcomputer hardware and software technology to Madagascar. According to the plan, Madagascar, with Symag training, will develop the ability to design and produce increasingly sophisticated components of microcomputer systems, including integrated circuits and application software.

Also during the meeting here, Mexico and Algeria offered to make available their agricultural information systems and data bases to a project that IBI is developing for an agricultural system via remote satellite sensing.

One of the more controversial projects discussed here would promote use of videotex in developing nations. Daniel Delpuech, of the

French Telecommunications Planning and Development Agency Idete, told the meeting that videotex is a natural technology for those countries because virtually all have existing telephone and television networks.

Some delegates raised questions about the lack of a videotex standard and the possibility that industrialized nations will monopolize this technology. But Delpuech suggested each country can adopt "the tool and not the existing applications in the industrialized nation."

Because videotex can be implemented with relatively little user training, he added, it can immediately be useful for such purposes as government message systems and news

broadcasting. While these projects vary in locations, sponsors and context, they have in common the coordination of the IBI and the fact that they bring together vendors from developed countries and representatives of developing nations that need advanced technology.

This special informatics development program, which the IBI hopes to see grow to at least \$1 billion in projects, includes direct transfer to the recipient country of hardware and software from the vendors, who will also be required to train systems users, managers and maintenance personnel. The aim, according to the IBI, is to apply the technology to nations' developmental needs while at the same time using the projects to

promote the countries' own informatics industries.

Thus, the projects imply established vendors helping to create new competitors around the world. But the attendance of several dozen of these firms, mostly from Europe, at last week's meeting suggests they agree with the IBI that "all will benefit from it eventually" if new markets are opened and existing ones expanded through the program.

Because the IBI, as a multigovernmental organization, is coordinating the planning and financing as well as providing technical advice and follow-up, companies are less wary of nonpayment and political problems that might otherwise arise in dealing with developing countries.

Third World Nations Discuss Tech Crisis

(Continued from Page 1)

tries, including economic and government management, education, health and agriculture.

Unfortunately, developing nations, for a number of reasons, have been disappointingly unsuccessful in applying this technology. The IBI, which consists primarily of Third World nations and is dedicated to advancing their informatics development, cites lack of trained personnel, poor access to financial resources and "the absence of management infrastructures" as the primary reasons for their inability to make better use

of external aid in informatics.

Previous IBI gatherings have discussed the political and policy-related issues surrounding adoption of national informatics plans and questions concerning relations with the large multinational firms that supply the necessary computer and telecommunications products and services. The Havana meeting, however, was almost totally devoted to planning a number of informatics development projects bringing together some of those vendors, primarily from Europe.

Representatives of Olivetti and Sperry Italy were in attendance, along with people from large international financial institutions and individual countries. The aim of these projects, to be coordinated by the IBI, is to effect technology transfers from the developed to the developing worlds, as opposed to the mere financing of hardware and software purchases.

Of the latter approach, the IBI said in a statement released here that "the mere transposition of products designed in the industrialized countries not only fails to have a lasting positive effect, but can halt progress and even be a destabilizing factor, should they not fall in line with the functioning of the existing structures."

The hope is that if properly planned and managed, informatics development projects can be transferred to other nations once they prove successful in the initial project. They are being targeted at those sectors of the economy that will not only allow countries to increase financial development, but also allow them to develop their informatics infrastructures further at the same time. To that end, IBI is sponsoring what it hopes will grow to at least a \$1 billion program of these informatics projects.

Specific Projects

The meeting here heard discussion of a number of specific projects, ranging from development of a legal data base in Argentina, with the aid of the Italian Supreme Court and a French-assisted development project in Tunisia of Arabic language software, to a plan to tailor videotex systems to rural, underdeveloped areas of the world (story above).

Attendees, while recognizing the acute developmental problems of the Third World, expressed optimism about the prospects for informatics in their countries.

They view informatics as, in the words of one of the delegates, "the basic tool" for economic and social development today, and they expressed concern that failure to act promptly could mean eventual forfeiture of their economic, social and cultural independence in the computer age.

Although calling for "true intellectual independence" from industrialized countries, a number of delegates here suggested the possibility of informatics coexistence between the Western powers and the Third World.

For example, a French representative suggested Third World countries could, with assistance, develop indigenous hardware and software production capabilities allowing them to find a niche in certain microcomputer markets, much as many smaller firms in the industrialized nations must learn to live with the major vendors.

He warned, however, that within three years those large vendors will have appropriated to themselves most Third World markets if those nations have not moved to establish their own presence.

By and large, however, the power and influence of the IBMs, Hitachis and Olivettis of the world were recognized without rancor. Rather, those companies were seen as possible sources for international informatics development through the IBI projects.

While calls for sharing the informatics wealth have long marked Third World discussions, the Havana meeting was more devoted to finding ways to pay for what the countries here see as their fair share of that wealth and to facilitate its efficient distribution.

Because of U.S. restrictions on doing business with and traveling to Cuba, the American DP/telecommunications industry was not represented at this meeting. But according to one IBI official, the organization hopes to include U.S. firms in its informatics program through meetings that will be held in the U.S. at a later date.

10 Practical, Relevant and Useful TechTran Briefings

TechTran briefings give DP managers and MIS professionals the planning and decision making information they need to meet the challenges of 1983 and beyond. Anticipating IBM's actions, relieving the applications backlog, integrating micros with mainframes are just some of the many issues addressed at these briefings. For more information use the coupon or call (203) 348-4412

New Horizons in Information Technology

July 7 - 8, New York \$595
Renowned consultants and authors, Martin Healey and David Healdich, provide valuable insight about hardware and software selection for information systems.

Integrated Information Systems

July 11 - 12, New York; Sept. 15 - 16, San Francisco \$595
This briefing shows how the DP department can implement an integrated information system for handling their organization's information traffic.

Multifunction Workstations*

Sept. 19 - 20, San Francisco \$595
This briefing reviews the concepts and facilities of multifunction workstations as well as present and future products.

IBM Futures

Sept. 22 - 23, San Francisco \$695
This strategy briefing examines the possible future actions of IBM in the areas of hardware, software, office automation and communications.

Electronic Mail

October 3 - 4, New York \$595
The cost/benefit potential of the many electronic mail products and services will be examined along with potential problems that may occur in the implementation process.

*Sponsored in association with Xephon Technology Transfer Ltd.

For instant registration or information call Melissa Marr (203) 348-4412

☐ Please send me a free schedule of TechTran briefings

Name _____ Title _____
Organization _____ Telephone _____
Address _____
City _____ State _____ Zip _____

TechTran • 72 Cummings Point Road • Stamford, CT 06904 • a subsidiary of Gartner Group

New Pillsbury Exec Tells How to Rise to Top

By Katherine Hafner

CW Staff

CHICAGO — John M. Hammitt's career as a DP manager has moved at a swift pace along a path leading straight to the top.

Currently in the top management information systems (MIS) job at Morton Thiokol, Inc., where he oversees about 450 people, the 39-year-old Hammitt will join the Pillsbury Co.'s Minneapolis office June 1 as vice-president of information management.

Hammitt's rise to the top of his field has been quick and direct, but his entrance into information systems was more circuitous. He received his bachelor's degree in chemical engineering from the Illinois Institute of Technology and his master's in business administration, with a concentration in finance and marketing, from the University of Chicago.

At age 20, Hammitt went to work for CPC International, Inc. here as a laboratory technician. He began working with computers for laboratory automation and was soon supervising the implementation of process control computers.

Although today he considers himself primarily a business manager, Hammitt attributes his success in large part to his engineering background. An advantage he holds over strictly technical people, Hammitt explained, is his ability to view computer problems from an engineer's perspective, not a programmer's.

"I look at a program in a different way," he said. "I don't see it as a mysterious job. It takes technical expertise just like the expertise involved in developing a marketing program."

"One thing I've been able to do is take a lot of the mystery out of computer programming," he said. "I was fortunate to have entered the business in the senior management level before I became too caught up in the technical side."

Morton is best known for its salt, but operates three other divisions as well: Chemical Products Division, Household Products Division and Aerospace Division.

Hammitt worked as a senior systems analyst for Morton from 1970 to 1972. As an analyst, he worked on systems to provide better information for analyzing the market and sales and developed product code information for salt and chemical products.

In 1972, he was promoted three levels to manager of corporate information systems; and in 1980 he was named director of information management, with companywide responsibility for computing, telecommunications and office systems worldwide.

In his current position, Hammitt oversees directly 100 DP individuals and about 350 Morton employees throughout the world. At Pillsbury, his immediate staff will consist of about 130 people, with 450 others scattered throughout the business.

"There are few people who make it this far as quickly as I did," Hammitt conceded. "That is, few people my age move on to a vice-president position with a \$3.8 billion company like Pillsbury."

'One thing I've been able to do is take a lot of the mystery out of computer programming. I was fortunate to have entered the business in the senior management level before I became too caught up in the technical side.'

The primary difference between his job at Morton and the Pillsbury job, Hammitt said, lies in the size of the two companies. Morton spends about \$25 million each year on computer-related equipment; Hammitt expects the acquisitions budget at Pillsbury to be twice as much.

As for what he plans to do when he takes the reins at Pillsbury next month, Hammitt said he will spend three to six months acquainting himself with the company in an effort to understand the business.

"First, I'll have to learn the food and restaurant businesses. Then I will have to learn the people," Hammitt said. "After all, the people and the culture of the business are what make it successful."

Perhaps most importantly, Hammitt added, he will examine closely Pillsbury's current information systems.

"I'll look at what they've already got in place," he said. "That's essentially the foundation that any future change has to be built from."



John M. Hammitt



Are your backups running into your prime shift?

Incremental Backups can reduce your backup time by 50 to 80%.

User can specify that ABR is to backup changed data sets only until a limit count is reached. At that time, ABR will interpose a full volume dump. This technique greatly reduces backup time while providing a periodic image of the entire volume.

- Automatic Volume Reconstruction
- Preallocation
- Automatic Tracking of Backups
- Unlike Device Support

FDR™

AUTOMATIC BACKUP & RECOVERY™

Available for IBM OS/VS & MVS
90 Day Free Trial



**INNOVATION
DATA PROCESSING**

970 Clifton Ave., Clifton, NJ 07013 • 201-777-1940

Datcomm Briefs

Court Upholds FCC On AT&T Return Rate

By Phil Hirsch

CW Washington Bureau

WASHINGTON, D.C. — Rejecting arguments made by the Department of Justice, the U.S. Court of Appeals for the District of Columbia has upheld a 1981 Federal Communications Commission decision allowing AT&T a 12.75% rate of return.

The commission's explanation of how it arrived at that figure was "somewhat cryptic," the appeals court said, but it "clearly" met a standard of being "reasonably justified."

AT&T to Cut Rates 40% On Wideband Service

WASHINGTON, D.C. — A 40% reduction in AT&T's wideband data transmission rates will become effective July 2 if there are no objections from the Federal Communications Commission (FCC).

The reduced rates would allow users of AT&T's High Speed Switched Digital Service (HSSDS) to transmit at a minimum rate of 1.5M bit/sec over a single channel. Currently, the minimum is 3M bit/sec over two channels.

HSSDS is designed primarily for video teleconferencing and bulk data transfer applications, said a phone company spokesman, who added that the lower speeds and charges reflect recent improvements in video teleconferencing systems which allow a 3M bit/sec signal to be compressed into 1.5M bit/sec.

According to AT&T, the single-channel HSSDS rate for a one-hour transmission between New York and Washington, D.C., would be \$380. By comparison, the present rate is \$600. Between New York and San Francisco, the two-channel rate is \$1,640/hour. If the tariff modification is implemented, an hour of transmission between the same two points would

cost \$1,000.

HSSDS is now available in 12 U.S. cities, but AT&T said that by the end of this year, the service will be extended to a total of 31 cities.

Cable Exec Warns House Against Regulation

WASHINGTON, D.C. — "You don't build the same kind of cage for a canary that you build for a gorilla," Thomas Wheeler told the House of Representatives' Telecommunications Subcommittee last week.

Wheeler, president of the National Cable Television Association (NCTA), was alluding to AT&T's contention that cable TV networks offering private-line communications services should be subject to the same regulatory restraints imposed on telephone companies.

"AT&T and the Bell operating companies currently have nearly 100% of the wire-line data transmission market," Wheeler contended, adding that "only seven" of the nearly 5,000 cable systems now operating in the U.S. offer "any form of data transmission, and some of these are so primitive they [hardly] compete with the telephone company."

The subcommittee is considering the need for legislation to regulate cable TV. Last week's hearing was the first of a series aimed at soliciting the views of interested parties. The next hearing, scheduled for early June, will include telephone company representatives.

Senate to Vote June 13 On Cable Net Regulation

WASHINGTON, D.C. — A bill that allows cable TV networks to provide private-line services free of regulation will be considered by the entire Senate membership June 13. The legislation, S. 66, is strongly opposed by AT&T and state public utilities commissions.

When the bill reaches the Senate floor, an amendment will be introduced by the sponsors of S. 66, who include key members of the Commerce Committee. The amendment provides for regulation of basic telephone service if provided by cable TV networks; requires network operators to file "information tariffs" with their state public utility commissions for all other services that, if offered by telephone companies, would be regulated; and encourages the commissions to deregulate the latter as soon as they become competitive.

AT&T and state regulators, however, have already told the amendment's authors that it does not go far enough.

Point-to-Point Option Planned for SBS Net

MCLEAN, Va. — Satellite Business Systems (SBS) wants to add a point-to-point option to its existing switched Communications Network Service (CNS), beginning July 14.

In a recent tariff submitted to the Federal Communications Commission, the company said each of the new "D1 Connection Arrangements" would provide CNS customers with a 1.5M bit/sec, full-duplex circuit between any two designated earth stations for \$26,000/mo. Customers would be free to subdivide their channels but would have to provide their own multiplexing equipment.

The new option, according to SBS, could provide "medium- to long-distance" wideband, communications service at savings of "up to 50% over comparable competitive offerings." Digital voice, computer-to-computer bulk data transfers and video teleconferencing are among the expected uses.

New Company Eyes Satellite Service

LOS ANGELES — Low-cost, two-way satellite-based communications

service, delivered through small-diameter rooftop antennae, is promised by National Exchange, Inc., a new company headquartered here.

Although the company is still looking for financing, its principals include two well-known telecommunications industry figures — Clay Whitehead, former president of Hughes Communications, Inc. and telecommunications adviser to former President Nixon, and Robert F. LaBlanc, former vice-chairman of Continental Telephone Co.

The National Exchange satellite system would provide 96 spot beams that would cover the nation's major metropolitan areas and provide enough power to permit use of "very small earth-station antennas" as well as low-power transmitters, the application said.

National Exchange plans to serve private users as well as common carriers.

Switched Voice Service To be Offered by EMX

ROCKVILLE, Md. — EMX Telecom, a new resale communications carrier that plans to begin offering switched services by the middle of next year, said it will provide users with savings of 20% to 30%. The company is a partnership of American Satellite Corp. (ASC), a major domestic U.S. satellite communications carrier, and Mitel Corp., a Canadian PBX manufacturer.

EMX initially will offer switched voice service among seven earth stations located near New York City, Chicago, Dallas, Atlanta, Los Angeles, San Francisco, and Denver. However, digital interfaces are planned, and the company expects to provide store/forward voice mail, facsimile transfer, and compressed video teleconferencing services.

The planned data transmission speeds are 9,600 bit/sec, and 56K bit/sec, plus and 1.544M bit/sec.

Packwood Previews Bill

(Continued from Page 1)

planned, adding that "we have to make sure [these companies] pay their proportionate share of the local subsidy."

Packwood, who is the Senate's major communications policymaker, stressed that although he believes the local network subsidy needs to be increased, his main purpose in introducing the new bill is to spark congressional discussion. The matter is one that Congress — not the FCC or the courts — should decide, he added.

Before Packwood's bill is formally introduced in the Senate at the end of next month, according to one of Packwood's aides, it will be sent to other senators for their comments.

According to a committee press release, objectives of Packwood's bill include:

- Establishing a "national policy guaranteeing universal telephone service by ensuring that increases in residential telephone rates are reasonable."

- Ensuring that "any carrier, private system or any other entity that connects directly or indirectly to any local telephone exchange contributes to the maintenance of the universal telephone network."

- Encouraging states to ensure that telephone companies make basic telephone service available at a minimal rate to all residential customers.

- Discouraging conflicting federal/state regulatory policies concerning intrastate and interstate long-distance telephone service.

Packwood said he is starting the legislative process now because he is afraid that pending rate increases will force residential and rural telephone users, particularly senior citizens and the poor, to "give up their phones altogether." In Oregon, he noted, Pacific Northwest Bell's basic residential telephone rates have risen from \$8.95 to \$13.95/mo since last June; nationally, "AT&T has requests pending for about \$4 billion in increases, \$3.5 billion of which would be borne by residential customers."

A FREE DASD RESOURCE and SECURITY SEMINAR



Westinghouse Operating Software Products invites you and your associates to a DASD Resource Management and Security Seminar.

- The Seminar, designed for DP Management, will outline considerations regarding the acquisition of DASD hardware. Issues such as when to lease, rent, or purchase; third party vendors; capacity planning; and achieving the greatest return on your hardware investment will also be discussed. Speaker: Mr. John A. Pickett, Corporate Manager Hardware/Software Acquisition.
- The Seminar will also discuss changes in DP methodology relative to the IBM disk operating system environment with a focus on the altered complexion of data storage and security. We will discuss ways to effecting meaningful changes to achieve greater efficiency in your DP Center. Speaker: Mr. John N. Gaston III, CCP, CDP, Senior Software Engineer.
- This unique Seminar will discuss a management approach to DASD space management techniques. Since the cost of DASD devices has diminished, the cost to properly manage that space has dramatically increased. This session will focus on what you can do to reduce these costs today and how you can prepare for the future. Speaker: Mr. Richard M. Steere, Senior Software Engineer.
- The fourth part of our Seminar will review data security and will provide meaningful insights into the latest techniques now available for this most important area. Speaker: Ms. Barbara M. Campbell, Technical Services Consultant.

Please join us at the Roosevelt Hotel, Madison Ave. at 45th St., New York City on June 7th, 1983. Take advantage of this opportunity to meet the Westinghouse people responsible for our software and hardware. To register, fill out the form below or call 412-636-3100.

Company Name: _____
Address: _____
Phone Number: () _____
Name of Attendees: _____

I will attend your DASD Seminar.

- ☐ Morning Seminar
8:30 a.m. to 12:00 Noon
☐ Afternoon Seminar
1:30 to 4:30

June 7, 1983
Roosevelt Hotel
Madison at 45th St.
New York, N.Y.

Return to: Westinghouse Electric Corporation, OSP
2040 Ardmore Boulevard, Pittsburgh, PA 15221



“

INQUIRE®
is one system
everyone in DP
will love

Al Rozewski,
 Systems
 Programmer

Ralph Kerr,
 Database
 Planning
 Specialist

Mike Buchner,
 Sr. Business
 Systems
 Analyst

Judi Butanowicz,
 Capacity Planning
 Specialist

”

It is a day to remember when everyone at a large computer site rallies for installation of a proprietary software product. For Blue Cross of Northeast Ohio, that day occurred in January, 1982.

Applications developers and Business Systems Analysts knew they had a system which could respond quickly to user requests. Capacity Planning liked the INQUIRE performance statistics and tunability for optimum response times. Technical Services found that the installation and maintenance of INQUIRE went flawlessly. And Data Administration said that the security in the system was powerful enough to keep control, but not so rigid as to

make security a problem for authorized users.

As a comprehensive information resource management system, INQUIRE makes the job of data processing people everywhere easier. INQUIRE provides its own non-procedural user language, a relational-like database architecture, and full-screen data entry and update. Truly, INQUIRE is the productivity system for today's toughest application problems. Ask the people in data processing.

If you run MVS, VSI or VM, productive software from Infodata can help in your Information Center or Development Center. Call us today to find out exactly how.

Infodata

Infodata Systems Inc.
 5205 Leesburg Pike
 Falls Church, VA 22041
800-336-4939
 In Virginia, call 703/578-3430
 Telex 899-125

Offices in:
 Dallas, Los Angeles, New York, Rochester, NY,
 Houston, Cleveland, Tampa, Washington DC,
 San Francisco, Chicago

Decision to Scrap Jupiter Disappoints Users

By Ed Scannell
CW Staff

ST. LOUIS — Despite Digital Equipment Corp.'s efforts to convince its mainframe customers of the advantages of rerouting their upgrade paths to its VAX-11 supermini line, most attendees of the Decus users group meeting here last week were disappointed the company would not be producing sequels to the Decsystem-10 and 20.

Predictably, users running out of CPU horsepower and counting on the delivery of the Jupiter products were skeptical about DEC's proposed solution to their upgrade problems, while those not planning any kind of upgrade in the near future understood and saw some merit in the vendor's strategy.

One user whose systems are fast approaching their processing limits and who was depending on the Jupiter upgrades was Randall Bennett, director of information systems for Edgcomb Steel of New England. "We have been waiting for Jupiter for the last couple of years," Bennett said, and "have made some short-term upgrades which were in line with waiting for the Jupiter. And now that it is not going to be available, we are really going to have to go back and re-think where we are going."

Edgcomb Steel considered DEC's

alternative of networking its Decsystem-1090 and 2020 systems into the VAX series "almost two years ago," while it was waiting for the Jupiter systems, but Bennett admitted the VAX network approach was not the company's first choice. "However, we will probably take another look at it now," he added.

Another user hoping to take advantage of the Jupiter upgrades' superior processing power was Rod Burke, director of computer services for Prycor Corp. Burke said DEC told him a year-and-a-half ago the Jupiter system would be available at about this time. "We probably would have ordered one, and it would have been my salvation by the time it would have come in," he said.

Burke does not see DEC's networking alternative as a solution to his problems because "you can't do the same things on the VAX lines that you can on the 20 line." Burke will probably install another Decsystem-2040 or 2060, which will allow him to have "fewer users on each system, but more users in total. We should also be able to get the same response time or better."

The major anxiety of Neal Stratton, manager of systems facilities for the Denver-based Energy Enterprises, centers on what DEC plans to do with the Tops-20 operating system. "We support a variety of clients, and if the operating system is going away over a period of time, we are looking at rewriting all the software

we have. There is no software path we can take," he explained.

Norbert Kubilus, vice-president in charge of development and operations for Rapidata, Inc. and who also served as a representative from the user community helping DEC design the Jupiter systems, said he was "personally disappointed" the company would not produce the systems. From a business standpoint, he did not see the systems as a necessity.

"Jupiter was both a processor architecture and an overall system architecture. Basically what DEC has announced is the discontinuation of the CPU, but not the concept," he noted. "Originally, Jupiter was just one of the pieces of the distributed processing environment."

DEC Scrubs Jupiter Project

(Continued from Page 1)

pany will continue development of hardware, software and communications enhancements for their products, most notably enhancements for the processors' Tops-10 and Tops-20 operating systems and a series of mass storage devices. However, there will be no further systems in the Decsystem line.

According to Rose Ann Giordano, manager of DEC's Large Computer Group, the company will put its "[Computer Interconnect] and [high-speed channel interface] and Ethernet connections on both Tops-10 and Tops-20." The company will also provide Decsystem-10 and 20 users with "integration tools" that will allow their existing software to run on the VAX-11 superminis, she added.

Giordano stressed that these packages are integration and not conversion packages. "We are not asking [users] to convert — we don't believe that most people will convert. Our strategy is to integrate Tops-10 and Tops-20 into our overall corporate information architecture," she explained. She said DEC is committed to "doing some incremental software to make that integration more graceful. In other words, we want everything from our personal computers to our mainframes to be able to move data back and forth in an easy fashion. Current applications on the [Decsystem-10 and 20] are viable."

DEC will ask its users over the next two months to help the company "prioritize" what they think are the most useful integration tools. "We should have an agreement with our users on what they think are the best tools by August first."

© Digital Equipment Corporation 1982

Student Opinion Form

Educational Services/Quality Assurance Program

This Student Opinion Form is designed to help Digital assure the quality and usefulness of its training courses. Please respond carefully and objectively as indicated below.

• Complete the course information above. Do not write your name anywhere on this sheet.

• The other side of this sheet consists of two sections: Background Information and Evaluation of Course. In the Evaluation of Course section you will find a list of numbered statements that may or may not reflect your opinions about this course. Please indicate whether you agree or disagree with each statement by selecting the appropriate lettered box from the following choices.

SA = Strongly Agree
A = Agree
U = Uncertain
D = Disagree
SD = Strongly Disagree
NA = Not Applicable

PLEASE READ DIRECTIONS ON THE OTHER SIDE. SELECT THE ONE BEST ANSWER.

BACKGROUND INFORMATION

• What is your relationship with Digital? (a) customer (b) employee (c) other

• What is your primary job area?
(a) hardware (b) software (c) management (d) education (e) other

• How many years of experience have you had with computers?
(a) less than 1 (b) 1-3 (c) 4-6 (d) 7-9 (e) 10 or more

• Did you meet all the stated prerequisites? (a) Yes (b) No

• Why did you take this course? (a) general interest (b) required for current job (c) required for new job (d) to help get new position

• What is your native language? (a) English (b) Spanish (c) French (d) German (e) Italian (f) Japanese (g) Chinese (h) Dutch (i) Swedish (j) Other

EVALUATION OF COURSE

COURSE DESIGN AND RESOURCES	INSTRUCTOR	TRAINING FACILITY
1. I learned a lot of valuable skills and information.	1. The instructor was very knowledgeable in the subject.	1. The training center provided all the services I needed.
2. The course content met my expectations.	2. The instructor answered difficult questions easily.	2. My workspace in the classroom was comfortable.
3. The course was well organized.	3. The instructor managed class discussions well.	3. The classroom was well laid out.
4. The course materials were easy to understand.	4. The instructor took the time to answer questions.	4. The lab was functionally laid out.
5. I needed all the information contained in the course materials.	5. The instructor was patient and helpful.	5. The lab time was adequate for this course.
6. The course emphasized the real job.	6. The instructor emphasized the objectives of the course.	6. My housing was satisfactory.
7. My test scores accurately reflected what I learned.	7. The instructor made effective use of the available time.	
8. The lab exercises were useful for learning.	8. The training center provided all the services I needed.	
9. The instructor was very knowledgeable in the subject.	9. My workspace in the classroom was comfortable.	
10. The instructor answered difficult questions easily.	10. The classroom was well laid out.	
11. The instructor managed class discussions well.	11. The lab was functionally laid out.	
12. The instructor took the time to answer questions.	12. The lab time was adequate for this course.	
13. The instructor was patient and helpful.	13. My housing was satisfactory.	
14. The instructor emphasized the objectives of the course.		
15. The instructor made effective use of the available time.		
16. The training center provided all the services I needed.		
17. My workspace in the classroom was comfortable.		
18. The classroom was well laid out.		
19. The lab was functionally laid out.		
20. The lab time was adequate for this course.		
21. My housing was satisfactory.		

24. Please indicate your overall impression of this training experience.
E=Excellent VG=Very Good G=Good F=Fair P=Poor

Claims Subscribers Not to Be Affected

AT&T to Greene: Loop Access Rates Won't Rise

By Phil Hirsch

CW Washington Bureau
WASHINGTON, D.C. — Although it will cost \$300 million over the next five years to separate the local and long-distance facilities of the Bell network, subscriber loop access charges will not be increased.

So said AT&T last week in a statement submitted to federal District Court Judge Harold Greene. Greene is considering the AT&T-developed reorganization plan that would carry out the U.S. vs. AT&T antitrust settlement negotiated last year.

Earlier this month, Greene raised questions about a number of costs associated with the reorganization and

requested comments from AT&T and others. He hinted that he would alter the reorganization plan if it resulted in subscribers paying higher rates.

A major assumption of the settlement, Greene said, is that increasing competition in the telecommunications marketplace should not increase local telephone rates.

None of the reconfiguration costs "involve subscriber loops," AT&T explained last week, so "none of the cost will be reflected in the [Federal Communications Commission (FCC)-prescribed] access line charge. Rather, the costs all relate to traffic-sensitive plant which will, in accordance with the FCC's access charge

decision, be recovered entirely in Bell operating company access charges to interexchange carriers."

An AT&T spokesman admitted, however, that as these charges are passed on by the interexchange carriers to their customers, telephone network subscribers will pay for reconfiguring the network.

Greene has scheduled a hearing for June 2, at which time he plans to discuss this and other questions with representatives of the phone company, the Bell operating companies, the FCC, the Justice Department, specialized carriers and consumer groups.

Another controversial matter concerns the proposed central staff orga-

nization that would perform a number of technical and marketing functions for the divested Bell operating companies, besides acting as their point of contact with the Defense Department.

Greene said he wants to know whether the organization's technical functions could give Western Electric an unfair advantage and whether its 8,800 employee staff could raise local telephone rates unnecessarily.

He has also questioned AT&T's plan for dividing up the No. 4 electronic switching systems that comprise the newest, most sophisticated central office switches in the Bell System. By next year, 91 No. 4 electronic switching systems are scheduled to be in operation, but the divested Bell operating companies will get only 10.

Deltak Offers Three Courses For IBM Users

NAPERVILLE, Ill. — Deltak, Inc. has announced three computer-based training courses for users of IBM's MVS/SP, CICS/VS and IMS/VS operating environments. Each course combines text, video and computer-based instructional material.

"MVS/SP Job Control Language (Part 1)" was designed for data processing professionals, including programmers, analysts, operators and systems support personnel who use IBM's JCL. The course was co-developed by Duotech, Inc. and is applicable to installations using IBM's MVS and MVS/SP operating systems using IBM's JES2 and JES3. The series instructs students in coding JCL procedures. The course assumes students have a basic understanding of data processing concepts. It also requires access to an Apple Computer, Inc. Apple II+ processor.

"CICS/VS Command Level: Applications Development" was designed for applications programmers and programmer analysts. The course builds on a student's knowledge and ability to use command-level facilities of CICS/VS. The package was designed for use with IBM's Interactive Instructional System or Goal Systems International, Inc. computer-based training systems. All commands, examples and exercises are presented in three languages: Cobol, PL/1 and assembly.

"IMS/VS Master Terminal Operations" covers the concepts of IBM's IMS data base management system in a data communications environment. The four-course series is aimed at lead operators in an MVS environment who will soon be working as master terminal operators. The series assumes two to three years' experience as a lead operator.

The courses have a monthly leasing fee of \$50 to \$125 per course, depending on volume.

The courses can be purchased for \$1,750 per course, Deltak said from East/West Technological Center, 1751 W. Diehl Road, Naperville, Ill. 60566.

The toughest test in a computer course at Digital is the one we use to test ourselves.

At Digital's Educational Services, quality is something we never take for granted. That's why we use a tough test to help us track how we're doing week after week.

And judging from recent results, we're doing very well.

You see, everyone who comes to our 27 worldwide training centers, whether they're studying basic programming or VAX/VMS system management, is asked to fill out a Student Opinion Form.

Course material, instructor performance, the overall educational experience, everything is covered.

And so far this year, 93% of the 55,000 people who've come to our training centers have given our instructors the highest ratings on the form. Results for course content and computer resources are equally as impressive.

Most important, our ongoing effort to create and preserve quality doesn't end in our classrooms. At Digital, it extends to every educational product we make. Our A/V and self-paced courses. Customer seminars. Computer-based instruction. And our Professional Educational Series, designed for anyone who wants to learn more about computers, even if they're not using Digital's computers.

So, whether you come to Digital for education, or our materials and courses come to you, you'll be getting a product that's proven successful. A product prepared by experts who not only know computer technology, but also the best ways to teach it.

For more information on the more than 550 computer courses we offer and our wide variety of educational formats, write to:
Digital Equipment Corporation, Educational Services, Box M-BUO/E55,
12 Crosby Drive, Bedford, MA 01730.

digital

U.S. to Increase Talks on Communications

By Jake Kirchner

CW Washington Bureau

WASHINGTON, D.C. — The U.S. will increase bilateral talks with other nations to identify common goals and interests in international telecommunications and information, Ambassador-designate Diana Lady Dougan said recently.

Dougan, recently appointed State Department coordinator of international communications and information policy, noted the increasing number of international organizations, including the United Nations and the Organization for Economic Cooperation and Development, which are active in the telecommunications and information policy area. While the U.S. will continue to work within those organizations, she said, the government will also pursue its goals on a country-by-country basis.

Dougan discussed her new office's plans and goals at a recent conference on international telecommunications policy cosponsored here by the Federal Communications Bar Association and the International Law Institute of Georgetown University.

Also addressing the conference was Riley Temple, staff counsel of the Senate Communications Subcommittee, who said S. 999 — the pending legislation on international communications — is heading for full Senate approval within the next few months [CW, May 16].

The State Department is expected to comment on that legislation soon,

but department officials have already said they believe Dougan, as primary administration spokeswoman for international telecommunications, has adequate resources and authority to handle the job the bill would place within the White House.

Past Efforts Not Sufficient

Addressing the issue of often-maligned previous government organization in this area, Dougan told the May 12 conference that, while "not a total condemnation of what has been done in the past," government efforts have not been sufficient for the task.

Concerning this organizational question, Dougan said, "We've had a lot of focus on form and procedure." Now what is needed, she added, is more concentration on the substance of government activity in this international arena.

She did comment, however, that her office hopes to make more sophisticated use of telecommunications in its work as chair for the 14-agency group that handles international telecommunications and information. She added that the State Department is considering the development of a data base on foreign countries' laws and regulations and their interrelations to help the U.S. in its negotiations.

Dougan also said that the government needs to identify the more important issues quickly and produce

"a clearer articulation of U.S. policy in this area and of our policy goals and objectives." In general, she said, the U.S. goal is to impress on other nations the value of this country's procompetitive telecommunications policy.

She also cited the need for long-term planning of U.S. actions in pursuit of that goal. "We can't just look to tomorrow," she said, decrying the habit of living from one international conference to the next and "strapping a fire extinguisher on our backs" whenever U.S. interests are challenged from abroad.

Dougan then discussed five areas her office will be examining in the near future:

- The impact of deregulation on U.S. foreign policy. She noted the Federal Communications Commission has recently undertaken "a far-reaching series of deregulatory activities," whose effects "go far beyond our borders" and which, she said, require more executive branch attention.

- Global communications services. She gave as an example for this category the blurring lines between domestic and regional satellite services.

- Transborder data flow. "Data flows, free trade and technology are all starting to merge," she said.

- International conferences and forums. Discussing bilateral forums, Dougan said, "more of that will be in order and will be very effective" in

identifying ways of working with individual countries in ways that complement U.S. representation at multilateral conferences.

- Research and development. She said R&D is always "popular rhetorically but ends up getting short shrift" in the government. Besides identifying possible long-term U.S. strategies and goals in R&D, Dougan said the U.S. must find ways "to show the positive effects of telecommunications and free flow of information" to persuade developing countries of the "positive effects of technology."

Microwave Meet Set for Aug. 12

DES MOINES, Iowa — The 2nd Microwave Users Seminar sponsored by Microwave Systems Corp. will be held Aug. 12-15 at the Marriott Hotel here.

The seminar will feature panel sessions covering the technical aspects of design and use of Microwave software. The panel sessions will include the software authors as well as a preview of the company's Motorola, Inc. 68000 software development tools.

Cost of the seminar is \$100 per person, from Microwave Systems, through P.O. Box 4865, Des Moines, Iowa 50304.

AMER-CAL INC.

PRESENTS

MANTIS* EDUCATION THAT WORKS

Amer-Cal Inc. has developed the education courses you need to realize the performance gains made possible by MANTIS*. These courses concentrate on the techniques necessary to take

full advantage of the fourth generation technology and prototyping capabilities of MANTIS*. All courses are taught in a "hands on", workshop environment, taking case study applications from inception through implementation.

1983 CLASS SCHEDULE

(Limit - 6 students per class)

Class I MANTIS - Concepts & Techniques

July 11-15
August 8-12
September 12-16
October 10-14
November 7-11
December 5-9

Class II MANTIS - Advanced Screen and File Techniques

July 18-19
August 15-16
September 19-20
October 17-18
November 14-15
December 12-13

Class III MANTIS - Table Handling Techniques

July 20-21
August 17-18
September 21-22
October 19-20
November 16-17
December 14-15

For more information call (312) 398-4700. Ask for Lonnie Lanzer.

or write

AMER-CAL, INC. 115 E. UNIVERSITY DRIVE, ARLINGTON HEIGHTS, IL 60004

*CINCOM SYSTEMS POWERFUL, FOURTH GENERATION LANGUAGE

Conflicting Reports Given Panel Hears Testimony on Effects of Automation

By Jake Kirchner

CW Washington Bureau

WASHINGTON, D.C. — A congressional subcommittee studying long-term U.S. employment prospects recently heard testimony painting a bleak picture of chronic unemployment, reduced job opportunities, an increasingly unskilled work force and a growing need for constant government-supported training and retraining programs.

The cause of this dreary outlook: automation. As part of its study, the House Small Business Subcommittee on General Oversight and the Economy spent two days looking into the effects of robots and other forms of automation, such as computer-aided manufacturing and design, on small businesses and their workers.

While witnesses praised automation's enhancement of productivity, efficiency and profitability, the panel also was warned of its negative impact as, in the words of Subcommittee Chairman Rep. Berkley Bedell (D-Iowa), "the country moves seemingly inexorably from a manufacturing or industrial economy toward an informational society with increasing use of technology."

"Large-scale dislocation of labor may occur, new skills and knowledge requirements may arise and working times and styles may be altered," a subcommittee staff analysis of the issue said.

The analysis continued: "Forceful demands for training and retraining in computers and automation, by workers and managers alike, may strain the limited resources of small businesses, as could the insistence upon natural attrition rather than layoffs, furloughing employees on a rotating basis, instituting part-time work and job sharing programs, providing for early retirements and developing new jobs for displaced workers."

Federal Involvement

The paper suggested the federal government may have to become involved with business, labor and local government entities in remedying this situation. But it warned that "there is a question as to how effective such assistance would be for unskilled and semi skilled labor and whether there would be other types of jobs available to them ... even if they were retrained."

Discussing the growth of U.S. industry's use of robots, Walter Weisel, president of the Robot Institute of America, told the subcommittee there were about 5,000 industrial robots in the U.S. in 1980.

That figure could rise to between 80,000 and 100,000 in 1990, given rapid economic recovery in the next year, he said.

In the long term, that figure could reach 500,000 robots by the year

2000, according to Ted Gordon, president of The Futures Group, a Glastonbury, Conn., long-range planning consulting firm. Whereas Weisel said installation of each robot leads to the loss of less than one job, Gordon said by the end of the century, the half-million robots will have displaced five workers each, representing 1.9% of the work force expected at that time.

In the near term, testimony from H. Allan Hunt, acting research manager, W. E. Upjohn Institute for Employment Research, Kalamazoo, Mich., indicated that robots will eliminate between 100,000 and 200,000 jobs by 1990 while creating 32,000 to 64,000 new jobs. Those new jobs, he said, would primarily be in robot manufacturing, direct suppliers to robot manufacturers, robot systems engineering and corporate robot users.

Weisel argued that most robots in use today are in "hostile" work environments and thus benefit the work force in general, and are often used to replace other existing, but aging, forms of automation. While not disputing claims of the benefits of automation, Leslie Lobel, legislative representative of the Communications Workers of America (CWA) — a group active in the issue of automation and employment — countered there is an extensive "debit column" to increasing automation.

Lobel said automation is leading to a general de-skilling of large segments of the work force, who "lose out on all the benefits of the new technology" because of the growing gulf between unskilled labor and management. "What happens to the skilled union member?" Lobel asked. "His or her job is continually downgraded as new technology is used, until he or she becomes a virtual automaton."

According to the CWA representative, automation not only replaces workers but allows management to increase its control of the work force through computer-programmed monitoring and pacing techniques. This, in turn, Lobel said, can lead to reduced pay levels for skilled workers.

Lobel said that at AT&T such reductions have already taken place, with Bell System central office technicians recently having to settle for a pay scale lowered to 80% of previous levels after the introduction of computerized testing equipment.

"Some 6,000 CWA members today are earning significantly less than they were four years ago, a direct result of new technology," Lobel said.

According to Lobel, a recent CWA study found "the manufacturing wage of a high-tech worker pays 25 cents per hour less than the average manufacturing wage across Massachusetts."

JUST SAY THE PASSWORD™ TO GET 1200 BAUD, PROGRAMMABLE AUTO DIAL, FOR \$449*



- 300/1200 Baud
- Auto Dial, with Telpac™ software available
- Full or Half Duplex
- Audio Phone Line Monitor
- Two-Year Limited Warranty

Password™ is the new USR™ friendly modem, designed for use with any small computer on the market today. We have compressed into its miniature case every operating feature for unattended high speed telecomputing. With auto dial/answer and auto mode/speed select there is little to do but turn it on. So compact (4.4" x 6.4" x 1.4") it mounts on the computer with Velcro®; when you carry your computer you can pocket your Password. So brilliantly conceived it achieves all this with just 12 tiny integrated circuits (a presage of long trouble-free service). If your dealer doesn't know the Password yet, write or call for complete specifications.

*Suggested list for Password complete with power, phone, RS232 interface cables. Telpac™ software optional extra, \$79. Password, Telpac, USR logo and the U.S. Robotics corporate name are all trademarks of U.S. Robotics Inc. 353

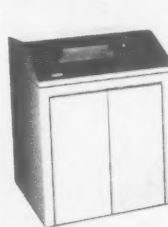
I would like additional information on USR Modems.

Name _____
Company Name _____
Street _____ Phone _____
City _____ State _____ Zip _____



U.S. ROBOTICS INC.™ 1123 WEST WASHINGTON BLVD.
CHICAGO, ILLINOIS 60607 TELEPHONE (312) 733-0497 353

Buy, lease or rent the latest Dataproducts line printers from MTI.



Model B-1000
1000 lpm band printer



Model B-600
600 lpm band printer



Model BP-1500
1500 lpm band printer

We are authorized Dataproducts stocking distributors.
So we get them first, and fast.

Our Dataproducts printers range from 200 to 1500 lines per minute, are plug-compatible with all popular minicomputers, and cost thousands less than the identical printers from the minicomputer vendor. And there's no waiting. MTI also specializes in setting up remote line printer stations.

We also have a professionally-staffed service department and an extensive parts inventory, so that we can have your equipment up and running within one day of your call.

Whether you buy, lease or rent our equipment, you'll find MTI is the one source for all the terminals, peripherals, systems, applications expertise and service you'll ever need. At good prices. Call us.

New York: 516/621-6200, 212/767-0677, 518/449-5959
Outside N.Y.S.: 800/645-6530
New Jersey: 201/227-5552
Ohio: 216/464-6688



Applications Specialists & Distributors, New York, New Jersey and Ohio.
DEC, Intel, Lear Siegler, Texas Instruments, Dataproducts, Diablo, 3Com, Hazeltine, Racal-Vadic, Digital Engineering, MICOM, Cipher, U.S. Design, Protocol Computers, MicroPro, Microsoft, Polygon and Select.

Contributing \$32 Million Over Three Years Canada to Fund Micro Development in Schools

By Paul Gillin
CW Staff

TORONTO — In a joint effort that the government hopes will be a shot in the arm for both Canadian education and the microelectronics industry, two government agencies have announced a project to fund development of a sophisticated new microcomputer and software for use in the Ontario school systems. The government will contribute \$32 million to the project over the next three years.

The Computers in Education project, funded by the Ontario Board of Industrial Leadership and Development in cooperation with the Ontario

Ministry of Education, will provide \$10 million through 1984 for the development and purchase of 16- and 32-bit microcomputers for Ontario's 4,500 schools. The plan also provides up to \$22 million through 1986 for the development of educational software, or courseware. Installation in Ontario schools will begin in January, according to the ministry.

The announcement, however, has been greeted with skepticism by some Ontario educators who believe that the delivery dates it sets forth are overly optimistic. Critics also say the hardware specifications proposed by the ministry contain short-

comings that, for example, would require \$21,000 worth of equipment to support six elementary school students (story on Page 15).

Ten-Year Functional Life

The planned microcomputers will have a 10-year functional life, according to the ministry. They will be configurable in a local-area network and will run Quantum Software Systems, Inc.'s Qnx, a version of Unix operating system with programming languages including University of Waterloo's Microbasic and Micropascal and Logo. The micros will eventually support a user interface similar to Apple Computer, Inc.'s Lisa, ac-

cording to the ministry guidelines.

The project also calls for the government to provide \$5 million to private industry to develop 57 sample models of courseware that will be available by the end of 1984. The ministry is also seeking bids from other vendors to write software for the new machines.

Rather than rallying around one of the machines currently in use in the schools, most of which are made by Apple and Commodore Business Machines, Inc., the ministry has promoted the education project with an eye toward Canadian business. The hardware is being developed by Canadian Educational Microprocessor Corp. (Cemcorp), a consortium of three companies controlled by Meridian Technologies, Inc. A Cemcorp spokesman said that a 16-bit version will be shipped next January with a 32-bit machine available by the fall of 1984.

'Significant Steering Effect'

Although Meridian has no desktop computer on the market, the company has agreed to the government's specifications to build a machine that "will have a significant steering effect on the development of computer use in education."

Acknowledging that development costs will greatly exceed the \$2 million provided by the government, George Gondos, software coordinator for Cemcorp, said the company hopes to take a lead in the educational hardware market. "One of the reasons I feel there isn't much good educational software in North America is because of the kinds of hardware that's available to run it on," Gondos said. "When you're actually trying to use the machine to teach something other than computer literacy, you're going to need more power and better graphics and user interfaces than are currently available."

A ministry spokesman agreed, calling the Ontario project "a major government initiative to try to stimulate the software industry."

"It's an intellectually intensive industry that we can perhaps capitalize on," said Tim Crawford of the ministry's Computers in Education project.

THE BEST THINGS YOU CAN PUT IN YOUR DATA GENERAL COMPUTER DON'T COST ANY MORE.



You now have an even better reason for keeping your Data General computer completely Data General. We've cut our prices by up to 40% on a wide range of the computer supplies you need most. And those prices are going to stay cut.

Data General computer supplies are made expressly to work on all Data General computers. So you know they're going to work the best.

Take magnetic media for instance. All our magnetic media come with a one year warranty. Because we test every single one of them before hand on the equipment you're using. Even the

test equipment gets tested at least once every week. And we reject 6% of the discs, diskettes and tapes other people would sell as first rate.

We've also made it easy for you to order Data General computer supplies. You can do it through the mail or by phone. And to get our catalogue, all you have to do is ask.

So look through your supplies and see what you need right now. Then call and find out how little it costs to put the best things in your Data General computer.

Now, there's no reason to get your computer supplies anywhere else any more.

Data General

50 Maple Street, Milford, MA 01757
Outside Massachusetts, Call: 1-800-343-8842
In Massachusetts, Call: 1-800-451-1014

Decus to Hold June Symposium

OTTAWA — The Digital Equipment Computer Users Society (Decus) will hold its 16th Annual National Decus Symposium here June 21-24. Operating concurrently will be a DEC and DEC-compatible hardware and software trade fair, Dec-faire-83.

Preregistration for the symposium costs \$200; the cost at the door is \$220; the one-day walk-in fee is \$100; and the fee for students is \$75. Admission to Dec-faire will be free to all DEC users.

More information is available from show managers Laing & Laing, 145 Bradford St., Ottawa, Ontario, Canada K2B 5Y9.

Some Fear Canadian Plan to Delay Spread of Micros

TORONTO — Some educators here are highly skeptical about a Canadian government project that would invest money in the development of microcomputers and software for use in Ontario's school system.

Basically, they say that the project, which may not be viable for the next couple of years, will further delay the spread of micros in schools as educators wait for the government's system to materialize and will threaten the future of the school system's current base of 8-bit computers.

In announcing the project in March, the Ministries of Education and Industry and Trade urged school boards not to "overinvest in the current generation of 8-bit microcomputers" and advised acquisition of those products "in limited quantities" in the future.

In response to the announcement, critics say, many smaller school districts have scrapped or pared plans to buy micros in anticipation of the educational supermachine.

"The fact that statements have been made that we should stop buying and wait is having a major effect on the impetus of computerization right now," Kerry Chalmers of the Carleton Board of Education said. "The teachers are ready to go. If we suddenly say, 'Sorry, we're not buying anything for the next two years,' we're a little afraid of the shock effect that's going to have and what it's going to take to get that impetus go-

ing again," Chalmers said.

Critics are concerned that the computers will not be compatible with any of the more than 10,000 micros already in use in Ontario schools.

They also argue that by building the hardware from scratch, the ministry has restricted itself to a small body of software that will not be available for at least a year after the hardware is delivered.

"It could end up being a piece of hardware with very little software support," according to Gerry Vullings, consultant for computer education at the Ottawa Board of Education.

"I feel that, if anything, the announcement at this time has delayed the natural evolution of computer education," he said.

But other educators do not interpret the ministry's guidelines as a di-

rective not to buy. "It was stated that school boards should continue to support the [computer planning] initiatives already in place," Jo Ann Wilton, computer consultant to the Peel Board of Education, said. "The only boards that sealed off their buying were those that probably didn't have any initiative in place. It makes good sense for them to sit back and do some planning for a year, anyway."

Epson Commissions Limo for Exec Travel

BEVERLY HILLS, Calif. — For the busy executive who just cannot drag himself away from his terminal, Epson America, Inc. has developed a not-so-humble solution.

The manufacturer of microcomputers and printers recently commissioned Lanmark Limousine, a custom car company based here, to build an

office on wheels — a little something to get you from one place to another.

Contending that the average corporate executive can waste about 40 hours a month traveling by car, the firm commissioned industrial designer Mario Zamparelli to develop the interior of the Mercedes Benz 450 SEL.

Epson said the car was cut in half and extended 52 inches. In that extra space, an Epson QX-10 microcomputer, an Epson HX-20 portable briefcase microcomputer, a printer, a 5-in. TV set with video cassette recorder, a telephone and a bar were installed.

Working on Wheels

Epson said the limousine has enough electronic gadgetry to allow the executive to send and receive messages from his office, receive stock reports and do research.

If that is not enough, since feverish work in heavy traffic could ruffle an executive's appearance, the limousine is also equipped with various grooming devices, such as an electric clothes steamer, manicure set, nail dryer and shaver.

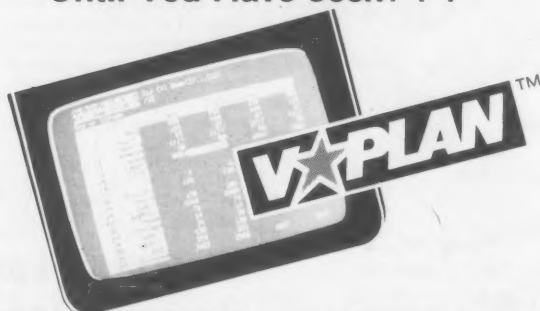
The car, which reportedly costs about \$150,000, is currently on tour throughout various cities in the U.S.



Epson's 'Limo of the Future'

The Bohle Co.

ATTENTION! DEC-10/20 Users Don't Buy ANY Spreadsheet Until You Have Seen...



Now! The Excitement of Real Personal Computing: The Power and Capacity of a Mainframe... \$2500!

Imagine magic ledger paper that can automatically maintain sums, averages, and percentages as you modify your data. That's just the beginning of what V*PLAN can do for you. Built-in report writer, algebraic expressions, five levels of help, on-screen self-paced tutorial, and the unique interactive capabilities of The Personal Mainframe* all make this the most user-friendly spreadsheet now available anywhere, micro or mainframe. On DEC's 36-bit hardware, the precision, dimensions and capacity are awesome. V*PLAN even optimizes terminal output, so you can exploit every CRT on your network, even dial-ups. VisiCalc® compatibility, of course.

Decision-making made simple, because now you can watch your data in action. Available now. Installs in 15 minutes. Price \$2500 for permanent license includes first year's maintenance (\$300/year).

I've made the decision! Tell me how I can try V*PLAN now.

Name _____
Title/Position _____
Company _____
Address _____
City/State/Zip _____
Phone _____

For more information, please write or call:

Professional Software Support
P.O. Box 877, Golden, CO 80402, (303) 237-8783

Buy, lease or rent the newest Lear Siegler terminals from MTI.



ADM 22 features detachable keyboard with numeric pad plus smart features like reverse video, reduced intensity, underlining and blinking.



ADM 36 is a DEC-compatible conversational terminal with all the DEC features at a low Lear Siegler price. And it has an optional 15-inch screen.

We are distributors of the complete line of Lear Siegler terminals and printers.

Look what we stock: ADM 3A, ADM 5, ADM 21, ADM 22, ADM 23, ADM 24, ADM 31, ADM 32, ADM 36 and 36I, and the 310A printer plus the new Versaprint 500 graphics printer. All of these at very good prices, whether you buy, lease or rent.

We also have a professionally-staffed service department and an extensive parts inventory, so that we can have your equipment up and running within one day of your call. And for those who want to save the expense of a service call, we offer depot service.

Whether you buy, lease or rent our equipment, you'll find MTI is the one source for all the terminals, peripherals, systems, applications expertise and service you'll ever need. At good prices. Call us.

New York: 516/621-6200, 212/767-0677, 518/449-5959
Outside N.Y.S.: 800/645-6530
New Jersey: 201/227-5552
Ohio: 216/464-6688

*DEC is a registered trademark of Digital Equipment Corporation.



Applications Specialists & Distributors, New York, New Jersey and Ohio. DEC, Intel, Lear Siegler, Texas Instruments, Dataproducts, Diablo, 3Com, Hamamatsu, Racal-Vadic, Digital Engineering, MICOM, Cipher, U.S. Design, Protocol Computers, MicroPro, Microsoft, Polygon and Select.

*The Personal Mainframe, DECSYSTEM-30 & DECsystem-10 are trademarks of Digital Equipment Corporation. VisiCalc is a registered trademark of VisiCorp. V*PLAN is a trademark of Professional Software Support. VisiCorp is in no way associated with Professional Software Support.

To Monitor Aircraft Separation NTSB Asks FAA to Expand ATC Safety Plan

By Jake Kirchner

CW Washington Bureau

WASHINGTON, D.C. — The National Transportation Safety Board (NTSB) has urged the Federal Aviation Administration (FAA) to expand plans to reprogram air traffic control (ATC) software to monitor aircraft separation procedures.

As part of a multiphase ATC safety enhancement program, the FAA announced in March that it will program computers at its 20 en route control centers to identify instances of failure to keep aircraft properly separated. Separation criteria are five miles en route and three miles in airport terminal areas [CW, April 4].

NTSB applauded that move, but noted that reprogramming will take months — if not years — to complete and will not include ATC operations at airport terminals. It is among aircraft under control from these terminals, the agency said, where most instances of controller errors and pilot deviations from separation procedures occur.

The recommendation to expand this program was contained in a lengthy study of ATC safety the NTSB conducted from August through December 1982 and released May 19. The study was undertaken to evaluate ATC operations and facilities subsequent to the board's last in-

vestigation, which was performed shortly after the October 1981 firing of 11,400 professional air traffic controllers for striking illegally.

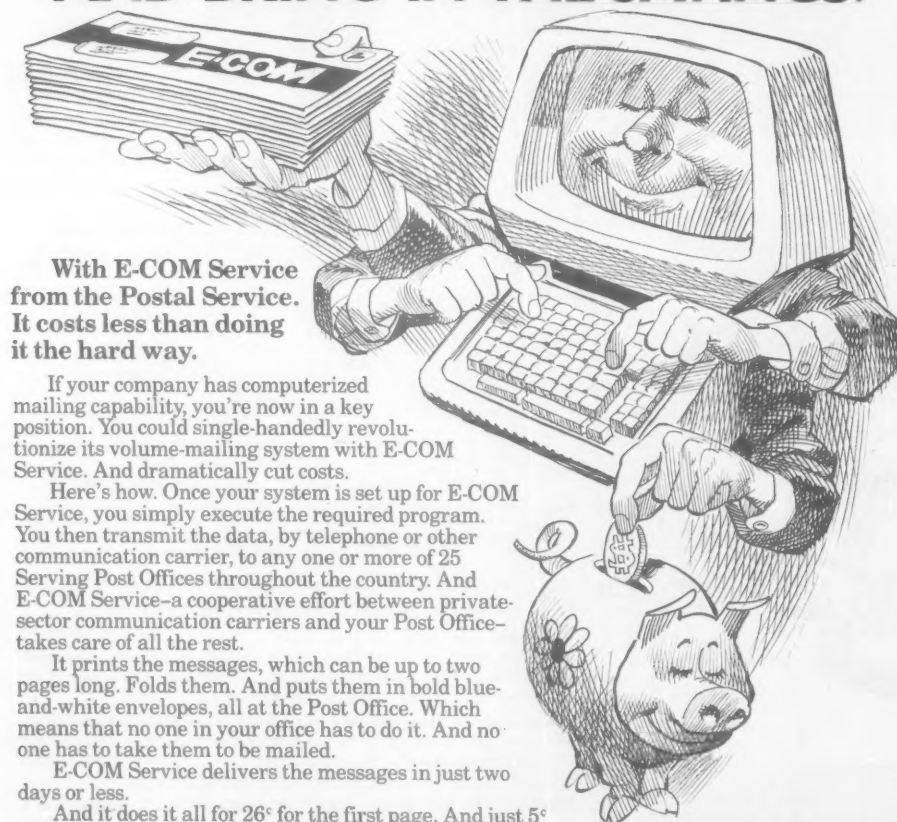
In its new report, the board told the FAA that "based strictly on the absence since the strike of a significant number of accidents attributed to ATC factors, the ATC system has been operated safely. However, the board identified several specific safety areas of concern which indicate that the margin of safety is less than the safety board believes to be desirable.

"The matter of most concern is that our investigative findings show that there has been incomplete re-

porting of operational errors and deviations, pilot deviations and new mid-air collisions," the board continued. Among corrective actions recommended was development of "a permanent program ... written into each radar computer to detect and flag every possible occurrence [of error deviation] based on predetermined separation criteria."

The recommendation to expand the FAA computer programming project was one of a series covering the entire range of ATC operations. The report also expressed concern that FAA efforts to reconfigure ATC sectors have caused system stress, including an instance in Atlanta in which extremely heavy demands on the computer, which generates weather reports, necessitated a system shutdown. Similar problems were found in Washington, D.C.

TEACH YOUR COMPUTER TO GET OUT THE COMPANY'S MAIL AND BRING IN THE SAVINGS.



**With E-COM Service
from the Postal Service.
It costs less than doing
it the hard way.**

If your company has computerized mailing capability, you're now in a key position. You could single-handedly revolutionize its volume-mailing system with E-COM Service. And dramatically cut costs.

Here's how. Once your system is set up for E-COM Service, you simply execute the required program. You then transmit the data, by telephone or other communication carrier, to any one or more of 25 Serving Post Offices throughout the country. And E-COM Service—a cooperative effort between private-sector communication carriers and your Post Office—takes care of all the rest.

It prints the messages, which can be up to two pages long. Folds them. And puts them in bold blue-and-white envelopes, all at the Post Office. Which means that no one in your office has to do it. And no one has to take them to be mailed.

E-COM Service delivers the messages in just two days or less.

And it does it all for 26¢ for the first page. And just 5¢ more for the second. Your only additional costs are for telephone or communication-carrier services provided by others. So your company can spend less than they're spending now on supplies, labor, and postage—doing the job the hard way.

We can help you figure out the best way to access E-COM Service. And we can even give you any technical advice you might need.

So why not find out more about E-COM Service? Think of all it can do for your company.

And imagine what that can do for you.

For more information, simply call or write your communication carrier or your local Postmaster.

E-COM 

IT DELIVERS SAVINGS ALONG WITH THE MAIL.

© USPS 1983

Hot Line Created For CRT Users To Air Concerns

BOSTON — CRT operators throughout the country who have questions about the psychological or physiological effects of CRT use or who want to air their views now have a hot-line number to call for information.

The hot line was created earlier this month shortly after the introduction in the Massachusetts legislature of a bill regulating the implementation of CRTs in the work place. It is planned to work in conjunction with a massive national campaign undertaken by 9 to 5, a national association of clerical workers, calling for education, research and user protections.

"There are surprisingly few means of educating the millions of VDT operators about the health risks involved in VDT use," Janice Blood, a spokeswoman for 9 to 5, said. "The hot line will serve to share information about what is known about health hazards connected to VDTs and to act as a kind of central clearinghouse."

The hot line is staffed from 9 a.m. to 5 p.m., Monday through Friday. The number is 800-521-VDTS; in Ohio only, it is 800-522-VDTS.

Meet to Cover Human Aspects

SAN DIEGO — The human dimension of information management will be the focus of the Society for Information Management's (SIM) 15th annual conference here Sept. 12-15.

Among the featured speakers will be Dr. Kenneth Blanchard, coauthor of *The One Minute Manager*.

The organization changed its name from Society for Management Information Systems in late 1982.

The registration fee is \$595 for members and \$650 for nonmembers, SIM said from Suite 600, 111 E. Wacker Drive, Chicago, Ill. 60601.

But Not Cure-Alls Users View Workstations as Productivity Aids

By Tom Henkel

CW Staff

ANAHEIM, Calif. — Professional workstations generally improve productivity, but they cannot do everything. That was the collective opinion of four users who recently installed different vendors' workstations in their offices.

All four of the panelists who participated in a session on workstations at the recent National Computer Conference here said their management workstation projects were a success. Most, however, added that the workstation they selected did not include some features they would like.

Thomas Moreland, a systems research analyst with Atlantic Richfield Co. (Arco), recently adopted a network of Xerox Corp. Star workstations in Arco's Los Angeles headquarters. Arco installed the workstations, Moreland explained, because the firm estimated people costs within the firm were going up at an approximate average rate of 6% a year, while hardware costs were falling rapidly. In addition, most of the people costs were incurred by management-level employees.

Furthermore, among the people using the workstations, most employed the same basic type of cycle: a manager created a document, transferred it to a secretary, who then either forwarded the document elec-

tronically to someone else with access to the Star network or prepared a hard-copy document for distribution, Moreland said.

The reaction to the Star network has been mixed. For some, the system required a fair amount of training. For others, using the system was fairly easy.

McDonnell Douglas Automation Co. (McAuto) recently instituted a test project using IBM's Professional Office Systems software package connected to an IBM 3033 mainframe. The package was installed in 1981 and allows 397 McAuto staff members to transfer data and messages, Moreland said.

Unless all the managers in the

group have access to their own terminals, they tend not to use them, Moreland said. He did not use the system effectively when he had to share a terminal with several people, he added.

Jim McCready, a regional sales manager at RCA Cylex, a division of RCA Corp. based in Atlanta, and a self-professed "technological cripple," said his firm has had some success with Grid Systems Corp.'s Compass portable microcomputers.

McCready said that RCA Cylex was having problems with processing orders for the firm's communications products. Before installing the Compass workstations, McCready said his department was using a

manual system — the only automation being a small word processor.

After four months of using the Compass terminals, the only problem has been in connecting the Grid workstations to the word processing unit. That problem, McCready said, should be solved in the near future.

Attie Mattox, a private consultant with The Mattox Group in Los Angeles, has been testing an Apple Computer, Inc. Lisa workstation for several months. While generally pleased with the unit, Mattox said the word processing features were not exactly what she had expected. Furthermore, Mattox said while Lisa's graphics capabilities are impressive, they cannot transform the user into an artist.

Get the Picture: Articles on Graphics Sought

Is one picture really worth a thousand words? Or — more importantly — is the picture worth the cost of generating it in terms of time savings and productivity gains?

Computerworld's July 25 issue will contain a Special Report on graphics systems. The report will explore the latest technologies, techniques and applications in the computer graphics market, covering the range of applications from computer-aided design (CAD) to

all levels of business graphics.

In particular, CW wants to look at emerging trends in low-cost CAD and three-dimensional graphics, graphics terminals and software, the market for color printers and other output equipment and boardroom graphics.

CW would like to see the cost-cutting benefits and time savings that can be realized with a graphics system.

CW welcomes submissions of graphics application stories, tuto-

rials and other testimonials related to the report's topic. The manuscripts, which must be submitted by June 10, should be no longer than four to six double-spaced, typewritten pages. Preference will be given to articles with black-and-white photographs, charts or graphs (originals, please).

Articles should be sent to Bill Laberis or Jim Bartimo at Computerworld, P.O. Box 880, 375 Cochituate Road, Framingham, Mass. 01701.

Let SDM[®] teach your computer to talk E-COM[®]

With SDM software. The quick, easy way to enter the age of electronic mail.

Your company can now access the U.S. Postal Service's E-COM (Electronic Computer Originated Mail) Service and realize dramatic savings in both costs and time. The SDM/COM product is the only software you need to transmit mail electronically from your computer to their computer. USPS E-COM Service takes care of the rest.

SDM/COM contains all the certification, formatting, transmission and interfacing requirements necessary for E-COM. And it only takes one day to set up SDM/COM on your IBM (OS/DOS), DEC (RT-11/VMS) or Turnkey system. SDM/COM has been tested and proven by actually sending over one million letters via E-COM.

So why not turn your existing computer system into an expedient, cost-effective mailing system? And teach your computer to talk E-COM.



For more information, simply call or write:

Software Development and Maintenance, Inc.
P.O. Box 668, Fuquay-Varina, NC 27526,
919/552-5662.

Buy, lease or rent TI's new Professional Computer from MTI.



The new TI 850 - 150 cps, designed to be compatible with your desktop P.C.



We are distributors of Texas Instruments' full line of portable terminals, matrix printers and Professional Computers.

In addition to offering you rental and leasing opportunities, MTI's experienced personnel will train you on your equipment either in MTI's classroom, or at your company. And we carry the software packages you need. Database management, electronic spreadsheets, word processing and much more.

We also have a professionally-staffed service department and an extensive parts inventory, so that we can have your equipment up and running within one day of your call. And for those who want to save the expense of a service call, we offer depot service.

Whether you buy, rent or lease our equipment, you'll find MTI is the one source for all the terminals, peripherals, systems, applications expertise and service you'll ever need. At good prices. Call us.

New York: 516/621-6200, 212/767-0677, 518/449-5959

Outside N.Y.S.: 800/645-6530

New Jersey: 201/227-5552

Ohio: 216/464-6688



Applications Specialists & Distributors, New York, New Jersey and Ohio. DEC, Intel, Lear Siegler, Texas Instruments, Dataproducts, Diablo, 3Com, Hazeltine, Rascal-Vadic, Digital Engineering, MICOM, Ciphon, U.S. Design, Protocol Computers, MicroPro, Microsoft, Polygon and Select.

Combination of DSS, Micros Seen Cost Cutter

By Jeffrey Beeler

CW West Coast Bureau

ANAHEIM, Calif. — The combination of personal computers and decision support systems (DSS) software can help large companies "dramatically" cut some of their major management expenses, according to Philip Evans, manager at Ferox Micro Systems, Inc. Speaking during a recent National Computer Conference session, Evans cited the example of a large hotel chain that uses a personal computer and DSS software to trim its financial planning costs by \$100,000 a year.

In the past, the hotel chain did all its internal financial planning with the help of an independent time-sharing service, for a total annual cost of \$100,000, Evans said. Recently, the user replaced the time-sharing system with DSS software and an Apple Computer, Inc. micro, which now allow the company to perform its financial planning activities internally, he said.

The switch from a time-sharing service to an in-house micro has enabled the firm to eliminate its \$100,000 expense item "almost entirely," Evans said. Although he identified neither the hotel chain nor the model of the Apple personal computer, Evans did estimate the micro's payback period at 15 days. Such case histories graphically illustrate the financial benefits that lie behind the surging popularity

Seybold to Offer On-Line Series Of Conferences

MEDIA, Pa. — A series of on-line international computer conferences will be offered by Seybold Publications, Inc. starting July 1.

The first two conferences will cover personal computers and electronic mail, respectively. Others will cover strategic planning for office automation, voice store-and-forward systems, electronic publishing and videotex.

This type of computer conference allows people who are geographically dispersed to discuss items of mutual concern and interest. Each conference will last six months and will revolve around a topic of mutual interest to participants.

Participation in the program costs \$2,500, and participants must have a terminal with communications capability, a dial-up modem and the ability to send and receive at 300 or 1,200 bit/sec.

More information is available through Seybold, P.O. Box 644, Media, Pa. 19063.

of DSS-oriented personal computers, he added.

Evans said he knows of 2,500 businesses — including such major corporations as IBM and AT&T — that are already using DSS software with microcomputers to do financial planning and similar applications.

Another speaker at the NCC session entitled "Corporate DSS on Micros" was Robert Martinez, a consul-

tant with the Los Angeles-based management consulting firm of Peat, Marwick, Mitchell & Co.

Martinez focused on his own company's experience with an internally developed Health Care Financial Modeling System, which reportedly allows hospitals to speed the preparation of their fiscal projections.

Intended primarily for financial planning and analy-

sis, the system uses a combination of DSS software and an IBM Personal Computer to calculate automatically such items as payback, amortization, depreciation and tax-loss carry-forward.

The system, which can be tailored to each client's individual needs, also consolidates figures for business units, projects and product lines, the speaker said.

Martinez credited the sys-

tem with being able to prepare 8,000-variable financial projections that would prove impossible to produce by hand. He also credited the system with boosting the firm's consulting productivity and enabling the company to minimize its client fees.

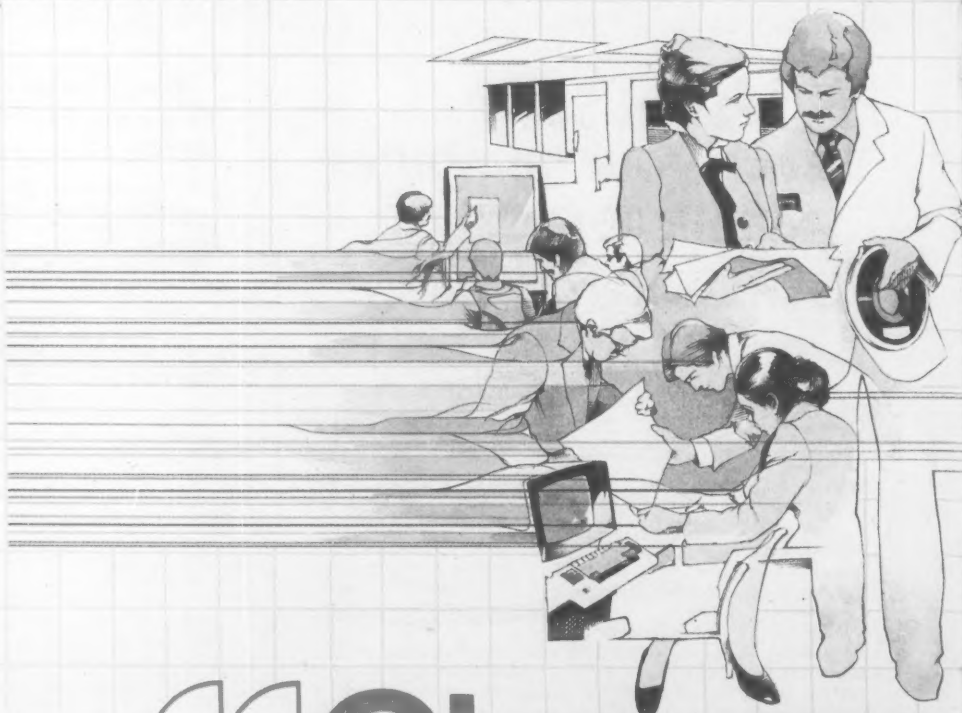
C.H. Rogers, marketing vice-president for the Long Beach, Calif.-based Marine Terminal Corp., also spoke at the session.

TECHNOVATION:
FOUR MAJOR NEW
TECHNOLOGIES
KEEP CINCOM
AT THE FOREFRONT
OF SOFTWARE
INNOVATION.

The development of new technology is expected of the independent software industry. But four major new software technologies from one independent is a milestone.

Cincom has achieved this milestone through its commitment to the massive R&D efforts needed to create these essential new technologies in several vital areas.

Advanced Technology. Innovative solutions. Across a broad area of need. That's TECHNOVATION!



Cincom

Hotel Group Learns to Control Rampaging DSS

By Paul Gillin
CW Staff

ANAHEIM, Calif. — Formulating a decision support system (DSS) strategy after DSS is already running out of control was the perplexing problem that faced Holiday Inns, Inc.'s Hotel Group, according to Mary Ann Furniss, Holiday Inns' director of management sciences.

Furniss addressed a DSS seminar at the National

Computer Conference held here recently.

The company responded by forming a Management Sciences Group to control the proliferation of DSS and later moved the group into the Management Information Systems (MIS) Department. DSS has flourished so much since then that an executive position for it was recently created.

Use of DSS began as early

as 1974, when MIS began building a major corporate data base. The system was used mainly for retrieval at first, "but management [started] to see some patterns in the business they hadn't seen before," Furniss said.

Interest in DSS spread through the finance and planning areas, which began using "nearly every time-shared vendor in the U.S." to provide the resources MIS

could not, Furniss said. "Before we knew it, usage was out of control. By 1979, we realized we were in big trouble if we didn't try to slow it down."

MIS took the lead in centralizing in-house support for outside services. Holiday Inns chose one time-shared vendor to use while it worked to bring data in-house on a Digital Equipment Corp. Decsystem-2060

computer, Furniss said.

The Management Sciences Group was formed at the user level and later moved within MIS. Currently composed of 17 people with a core of five writing modeling applications, the staff functions primarily as a consulting group and also builds end-user applications and evaluates packages. The staff also drives the DSS planning function at Holiday Inns, Furniss said.

Mainframe tools include a financial modeling package, time-series analysis, presentation-quality graphics, statistical analysis and graphics and Fortran. Interactive systems are available for capital projects, budgeting, guest room rates analysis and forecasting. A DSS is also tied into Holiday Inns' 1,700-hotel reservation system.

With nearly half of Holiday Inns' DSS users now writing most of their own applications, the Management Sciences Group staff is now turning its attention to microcomputers, Furniss said.

The firm has elected to support IBM's Personal Computer, Radio Shack's TRS-80 and is looking at microcomputers from DEC, Apple Computer, Inc., Texas Instruments, Inc. and Fortune Systems Corp. The staff will not discourage a user from buying the micro he wants, "but if he wants to choose [one other than those we support], he's sort of swimming at his own risk," she said.

'Rocky Road'

The road to a successful DSS environment was a rocky one, Furniss said, and she pointed to several pitfalls other companies should avoid:

- Make sure your data base administration is strong. "Once we had 200 users with all the power in the world, they began to build their own data bases in their own ways," she commented. "It is very important to get this under control early on."
- Do not impose DP-favored models on users without their approval. This is one responsibility of a central DSS staff.
- Do not force DSS on unwilling users. "Managers have to feel ownership of the system or else they won't use it," she said. Once DSS is in use in some locations, it inevitably catches on.
- Avoid data overload. "Watch out for the accounting mentality," she said.
- Sell no DSS before its time.
- Provide significant and visible user support.
- Be aware of the user turnover problem.

Results of Cincom Technovation are:

TIS The first single software system that successfully addresses both the Information Center concept and data processing's long term strategic responsibilities.

MANTIS A sophisticated Fourth Generation Application Development System so powerful and efficient, it may replace COBOL as the preferred commercial software language.

MRPS A new and complete manufacturing control system that features the very latest in manufacturing theory and on-line data base implementation.

ULTRA The first DBMS for VAX users to incorporate the new generation of integrated data base architecture. Soon to be introduced.

These and other new Cincom software products now provide powerful, fully integrated software support for the entire spectrum of user development needs. Users—from programmers building complex systems to end-users with virtually no computer experience—can now partner with one software firm for all of their needs.

TIS. MANTIS. MRPS. ULTRA. Just four examples of the many new technological innovations resulting from Cincom's significant commitment to Technovation.

For more information on how you can partner with Cincom to capture the power and excitement of Technovation, contact our Marketing Services Department, 2300 Montana Ave., Cincinnati, OH 45211.

800-543-3010

(In Ohio: 513-661-6000.)
(In Canada: 416-279-4220)



Systems

Your strategic software partner.

Micro-to-Mainframe Links Seen All-Important

By Robert Batt

CW West Coast Bureau
ANAHEIM, Calif. — Until microcomputers are consistently linked with mainframes in large data processing organizations, their usefulness will be very limited, an audience at the National Computer Conference was told here recently.

Speaking at a session entitled "Business Planning on Microcomputers," Dale Cooper, manager of management science at Getty Oil Co., said many software requirements must be met before micros can attain their true potential as business tools.

Cooper said Getty Oil has been unsuccessful to date in linking up its micros with host mainframes. "We want [IBM] 3270 emulation. So far, I am unable to link our micros with our mainframes, and so from a user point of view, the micro technology does not work."

In particular, linking micros with the IBM Systems Network Architecture is a problem, he added. This is causing a lack of enthusiasm among DP professionals at Getty Oil. "I can hardly say they are taking to microcomputers with a vengeance," he noted.

Software is another problem. "Our experience with Fortran, for example, indicates that its efficiency needs to be improved by a factor of more than 10 before it will become useful on microcomputers. There are a lot of problems here for software developers to solve," Cooper said.

Problem of Integration

Addressing the problem of integration, another session speaker, Betty Feezor, product manager for software design and development at Management Science America, Inc., said business

planning on micros is only valuable if micros are linked to application software on the mainframe.

"The heart of financial information in large corporations resides on the mainframe. For adequate business planning using personal computers, general ledger resources need to be tapped directly by the micro," she said.

There are very few easy ways to transfer meaningful data from the mainframe to the micro, Feezor admitted. The key to the successful application of the new technology, however, is to make it

easy for end users to link up with mainframe application software. "By establishing such a link, it is possible for a micro to function both as a terminal to the mainframe and as an executive workstation," she claimed.

Feezor cited a recent study conducted by International Data Corp. of Framingham, Mass., that showed that shipments of personal computers are growing at 62% a year and are estimated to rise to 87% over the next few years. Most of these computers are going into the business environment, she observed, so a crucial element of business planning on micros is to have text processing, word processing and graphics capabilities on personal computers.

Also addressing the issue of integration was Brian Fischer of Context Management Systems in Torrance, Calif. A former consultant with Booz-Allen and Hamilton, Inc., Fischer said micros need to deal with modeling applications because they form the basis of most business decisions. Vendors need to enhance the analytical capability of micros by providing more powerful graphics functions, he argued.

"The most effective approach to successful business planning is to provide user-friendly, cheap and accessible products that allow the user to explore and understand alternative courses of action and which allow managers to find out what is really going on," according to Fischer.

M/A-COM Alanthus Brings in the Winner

We looked out across the field of professional computers, and there it was. For capability, price, and features, the Texas Instruments Professional Computer is the hands-down winner.

We're M/A-COM Alanthus, the nation's leading value-added distributor of business computers software and data communications products, serving the Fortune 500 companies. We distribute state-of-the-art products and offer lease or purchase plans tailored to your needs. Then we follow-up with systems integration and software support, training, and prompt on-site maintenance nationwide.

We're proud to add the Texas Instruments Professional Computer to the many products we offer. The Texas Instruments Professional Computer can handle your business application needs such as word processing, accounting, financial modeling, data base management, and graphics. It uses the most popular software like Easy-Writer, Multiplan, and dBase II, plus hundreds of other application programs.

The Texas Instruments Professional Computer will fit into your expansion plans, too. Soon you will be able to use these 16-bit desktop computers to access your IBM mainframe or arrange them in clustered networks. Natural Language Inquiry and Voice Management Systems are also planned future enhancements.

Today, you can start with a built-in 320K single 5 1/4-inch floppy drive. Then, you can add a color monitor, and either another 320K floppy drive or a built-in 5-Mbyte Winchester. Start with 64K memory and grow to 256K. And if you place your order before June 30, we'll give you the 256K memory for the 64K price!

When it comes to top quality products, flexible financing, and customer support, M/A-COM Alanthus makes it easier.

M/A-COM
ALANTHUS DATA INSTRUMENTS

M/A-COM Alanthus Data, Inc.
6011 Executive Boulevard
Rockville, MD 20852

For the location of your nearest sales office, call: (800) 638-6712



DP USER DIRECTORIES

NY Metro-Tri-State/NY, NJ & CT
New England/ME, NH, VT, MA & RI
Mid-Atlantic/PA, MD, WV, VA, DE, DC

• The Source to Multi-Billion Dollar Markets
• The "Who's Who" of EDP Decision Makers
• 9,250-15,250 Top Computer Executives per Directory

• 3,000-5,000 Computer User-Sites/Region

• Installed Mainframes & Minicomputers Listed

• FUTURE PLANS: Projected upgrades, discards, acquisitions of hardware and software specified with dates in user section and index.

• Fortune 500, Fortune 1000 and major non-industrial companies listed.

• RJE & Timesharing with computers at other locations specified in user section and hardware index.

• Company, division, address, industry, main phone #, contact's name, title, functional area, direct phone # or ext., major hardware installed, major software used, consultants used, applications, & misc. info.

• 117 indexes by type of Hardware, Software & Industry (e.g. CICS/IMS/VS/IBM)

• 303X's/DEC PDP/RP/RS II/COSOL etc.

• Key Financial Executives & EDP Recruiters listed.

• Chain of command of executive personnel included.

• Labels, index cards, print-outs, mag. tapes & market research are available.

• Advertisers in Vendor Directory

PRICE - \$125.00 ORDER - Mail check to:

Computer Management Research, Inc.

20 Waterside Plaza, Suite 1-C

New York, NY 10010

212-683-0606



Some of our VARs' best ideas began on the backs of envelopes.

Great ideas, plus hard work, business sense and commitment to customer satisfaction. That's what it takes to be a Value Added Remarketer for IBM.

IBM is looking for business people with specialized industry experience. For companies that can successfully merge our systems with applications software. For those to whom quality is fundamental.

Put IBM to work for your customers.

To begin with, IBM wants qualified VARs to have the broadest choice of systems and software: the IBM Personal Computer, Displaywriter, Datamaster, CS-9000, System/36, and Series/1 with its new enhancements.

These products carry IBM's reputation for quality. Equally important, all have access to IBM's nationwide service.

That means VARs who work with IBM have more to offer their customers. But that's only part of what IBM can offer to its VARs.

Put IBM to work for you.

IBM also provides VARs with tools to assist them in marketing to their customers and prospects.

For instance, IBM helps VARs with business shows and product literature. We help VARs create their own direct mail programs.

And IBM brings prospects with special needs together with VARs who have unique solutions. It's done with a special referencing system which supplies information about our VARs' offerings to IBM's salesforce.

IBM's Value Added Remarketer Program: Great ideas, hard work and business ability are what's required. For more information, call 1 800 IBM-VARS or send in the coupon.

IBM®

Larry Humphreys
IBM Distribution Channels
P.O. Box 76477
Atlanta, GA 30358

Please send me information about qualifying as a VAR.

Name _____ Title _____

Company _____

Address _____

City _____ State _____ Zip _____

Phone _____

CNY-5-39

Businesses to Value Networking, Analyst Says

By Ed Scannell
CW Staff

ANAHEIM, Calif. — As more and more microcomputers populate corporate desktops in both large and small businesses over the next several years, many of these companies will value the networking of these systems and will link them to mainframes as a vital corporate asset.

This observation was made by Dale Kutnik, analyst for The Yankee Group, who chaired a session here last week at the National Computer Conference on distributed processing.

"If they intend to move information around, corporations will view networks as an asset. The trend of the 1980s will be to network these corpo-

rations' departments together," Kutnik predicted.

To qualify as a network, Kutnik said, a distributed system must be able to utilize stand-alone systems, have some form of interaction among the nodes and be able to communicate with mainframes.

The major advantages networking offers corporations, according to Kutnik, are increased efficiency of operations and control over the growth of information centers and nodes.

"Desktops make distributed data processing inevitable," Kutnik asserted. "However, most of the desktops out there have not been networked," he said.

By 1985, however, 50% of the in-

stalled desktop systems will have asynchronous communications adapters or ports or will have a built-in modem, according to Kutnik.

This present lack of networking capabilities among the majority of desktop systems could prove to be the equivalent of the Trojan horse in the distributed processing industry, he said.

Kutnik implied that while the proliferation of desktop systems appears to be advantageous, the lack of communications between desktop systems and mainframes will only cause corporate chaos.

Kutnik said the competition to supply corporations with networks will come down to "a battle of the networks" between IBM's System

Network Architecture (SNA) capability and AT&T's Antelope. The winner of this competition not only will control a corporation's network, but also will control the equipment that makes up the network, Kutnik maintained.

Not surprisingly, SNA will continue to be a hot topic and a much-wanted asset, Kutnik said. According to the results of a survey conducted by The Yankee Group, by 1986, 75% of Digital Equipment Corp.'s PDP-11 users will want SNA capabilities. He said the network these users will have will be a hybrid made up of SNA and Decnet.

While AT&T's networking capabilities are "on paper only," at this time, people should not underestimate the company's future impact in this market.

"Bell only has two nodes up and running, and they don't have a backbone for their network yet either," Kutnik noted.

Auditing Seen More Complex

ANAHEIM, Calif. — As computers continue to move from the old batch-oriented environment to integrated on-line networks, the job of system auditing will become increasingly complex. When outside auditors invade the DP department, DP managers have to be able to deal with and, more importantly, assist the auditor in his job to assure smooth auditing procedures.

That was the message conveyed by Frederick D. Winslow, director of computer auditing for the San Francisco firm of Main, Hurdman, when he addressed attendees of a session at the National Computer Conference here. Speaking on "Managing the Audit of Complex Computer and Communications Systems," Winslow said that when dealing with outside auditing firms, the best thing a DP manager can do is supply the auditor with as much pertinent information as possible.

"Be prepared with as much summary-level information as you can dig up," Winslow told session attendees. "Also be prepared for greater auditor demands than previously required because of the increased complexity of computer systems."

The speaker maintained that DP managers have to help install audit retrieval packages as well. He said that the more assistance the DPer can give to the outside auditor, the easier his own task in the whole auditing process will be.

"Audit retrieval packages can help the auditor discover what transactions are to be concentrated on and alleviate needless work. The DPer plays an integral part in getting these packages put into operation," Winslow said. "DPer's have to give more information as to what the auditor has to use and how it can be used to do needed tests."

In auditing complex systems, DPer's will have to take more criticism than in the past, Winslow said. He pointed out, however, that DPer's should not take this to heart because "auditors rarely praise anyone."

WHAT THE HECK IS AN EXECUTIVE WORKSTATION?

A lot of people have the wrong idea of how you should use a personal computer. And fancy phrases like "executive workstation" only hide the benefits of personal computing under a cloud of tech-babble.

The fact is, instant information and a computer on every desktop don't always mean bigger profits and more efficient workers. Because when "non-computer people" use personal computers in business, the software they use is always more important than the hardware that's used with it.

But sometimes this software's just too hard to use, or can't do the job. Or it's already out-of-date. All of which confuses the same people it should be helping. We'd like to clear up some of that confusion.

THE CONTEXT MBA: IT TURNS EXECUTIVE WORKSTATIONS INTO "EXECUTIVE THINK-STATIONS."

The Context MBA is software that lets you use the personal computer as a creative tool for better business decisions.

We've combined the five most useful business functions of all personal computer software - electronic spreadsheet, graphics, information management, report writing, and communications - into one easy-to-use, integrated product. Designed for businesspeople, not programmers.

This means you only need one software package to make your personal computer do everything it was designed to do in the first place. And then some.

TURN BUSINESS DATA INTO BUSINESS INTELLIGENCE. INSTANTLY.

By building five major functions into one software package, the Context MBA helps you to make better decisions from the large amount of data that's unique to your business.



Context
MBA™

Personal Computer Software for Business Decisions.

With the MBA, for instance, you can connect a personal computer to your company's main computer to retrieve business information. Like

sales figures, operating expenses, or product reports. In minutes.

Store, edit, sort, or modify this information on your personal computer and use the MBA's electronic spreadsheet to create a "model" of your business.

Develop plans and forecasts in a fraction of the time it would take to do them by hand, or by using a single-function software package.

While using the MBA's spreadsheet function, you can instantly graph and chart vital figures on the same screen. So, as you make cost or revenue assumptions, you can see immediately how the result would affect your business - this year, and five years from now.

And when you've made your decision, use the MBA's executive report writer to put words, numbers, and graphs together in a clean, printed report.

It doesn't take a computer to tell you that this kind of control over business facts, figures, and alternatives gives you an edge on the competition and a head start on each new day.

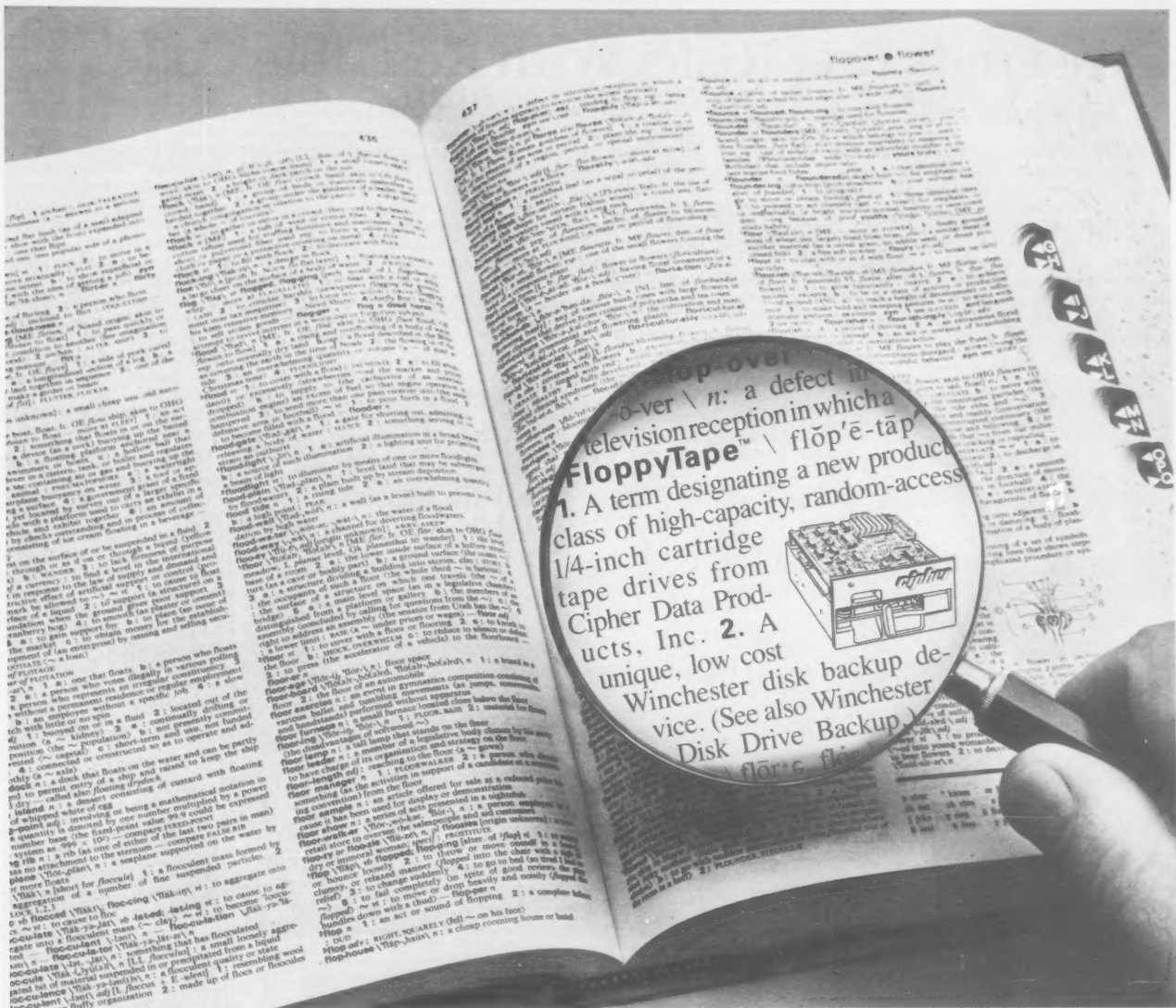
SEE IT NOW.

The Context MBA can be used on the IBM Personal Computer, the IBM PC-XT, and the Hewlett-Packard Series 200 personal computers.

Call us at 1-800-437-1513 (in California, call 1-800-592-2527) for the name of your nearest Context MBA dealer and a copy of our tell-it-like-it-is brochure, *Software Explained*.

If you have an IBM PC, we'll also be glad to send you a free copy of our Context MBA Sampler Disk that gives you a live demo of the MBA.

CONTEXT MANAGEMENT SYSTEMS
23868 Hawthorne Blvd.
Torrance, CA 90505 (213) 378-8277



The latest word in computer peripherals...

...and the last word in disk backup.

The 525-CT FloppyTape is a new class of product that provides the last word in Winchester disk drive backup with its many unique design features. Using the standard 1/4-inch tape cartridge, this innovative device combines low cost, high capacity, and disk-type data accessibility to provide disk backup features with new meanings:

Low Price 1. Sells for appreciably less than any other device with comparable features. **2.** Priced at \$300 per unit in large OEM quantities.

High Capacity Storage 1. Stores 32 unformatted megabytes of data on a standard 1/4-inch tape cartridge. **2.** Allows one tape cartridge to replace up to 40 double-sided, double-density floppy disks.

Floppy Disk Emulation 1. Configures a standard 1/4-inch tape cartridge with important floppy disk features such as random access to sectors and soft sector formatting. **2.** Allows in-place updating of information stored on the tape.

Immediate Integration 1. Attaches to standard floppy disk controllers. **2.** Provides plug compatibility with standard SA450 or SA850 interface connectors.

Space Saving Design 1. Packaged in the same compact form factor as the 5-1/4-inch floppy or Winchester disk drive. **2.** Designed with easy front panel loading and positive cartridge lock. **3.** Permits flat or side mounting.

So, let FloppyTape redefine your disk backup requirements. Next time you're in the market for the latest word in backup, just look it up...then hook it up.

For a Further Definition—Contact Cipher for a free 525-CT FloppyTape brochure, or for further information on other Cipher products.



cipher
data products, inc.

10225 Willow Creek Road, P.O. Box 85170, San Diego, California 92138
Telephone: (619) 578-9100, TWX: 910-335-1251

CIPHER DATA PRODUCTS (UK) LTD.
Camberley, Surrey, England
Telephone: 0276-682912
Telex: 858329

CIPHER DATA PRODUCTS S.A.R.L.
Paris, France
Telephone: (1) 668 87 87
Telex: 203935

CIPHER DATA PRODUCTS GmbH
Munich, West Germany
Telephone: (089) 807001/02
Telex: 521-4094

Exec Finds Few Risks With Reusable Code

By Lois Paul
CW Staff

ANAHEIM, Calif. — "If you don't address the production of code on more than a line-by-line basis, you will not achieve productivity."

James A. Manara, vice-president of Security Pacific National Bank in Glendale, Calif., offered that advice to attendees at a session titled "Reducing Program Development

Risks with Reusable Code" at the recent National Computer Conference held here.

His firm implemented reusable code via a product called Ready Code from Raytheon Computer Services more than a year ago, and "we have had programs that have produced up to 95% of the code from generation and only needed 5% unique code," he said.

While investigating the Ready Code product, Manara's group set up a pilot project that essentially redid from scratch a program that had been completed by the firm. The project, which initially required six programmers, was completed by one programmer in 136 hours.

Five Programs

With the results of this project in hand, Manara's

group tackled a new development project for the bank that called for the development of five programs against tight deadlines. The introduction of reusable code to this process required changes to the functional design of the project.

"The five programs grew to 19 modules, which at first scared the project manager," Manara recalled.

Then he realized that it

would be easier to maintain these 19 modules than it would have been to maintain the original five programs, because the modules using reusable code had isolated many of the common functions.

The result: The bank saved 48% of coding, testing and development time and 33% of total front-to-back development costs for this project because of the use of reusable code, Manara reported. In addition, documentation was generated during the coding phase.

Manara conceded that testing was slow at first, but increased in speed as the development team gained confidence in the techniques.

Bob Lanergan, head of the Advanced Software Group for Raytheon's Missile Systems Division, told the attendees that use of reusable code can address the redundancy and maintenance problems that all DP installations must face.

THE BEST SELLERS OF CAPACITY MANAGEMENT



BGS Systems, Inc. offers a truly integrated family of interactive capacity management products. We authored the first practical user-oriented packages for capacity management . . . BEST/1 and CAPTURE/MVS. They rapidly became the best sellers in the industry. Today, over 500 DP installations worldwide use BGS products for accurate and efficient data collection, data reduction and analysis, historical data base, modeling, network management and capacity planning.

Our current best sellers address the specific needs of your MVS or VM operating system. In addition, BEST/1-SNA models your data communication network. In fact, BEST/1-MVS and BEST/1-SNA work together providing an integrated host/network modeling facility. And, recognizing that many large data centers use both MVS and VM, we wrote INFO/BASE so you can store both MVS and VM performance information in a single data base.

Our system is also comprehensive. We support your capacity management needs from feasibility study through operation and growth.

BEST/1-MVS™ Capacity Planning/Performance Modeling Tool. Evaluates impact of workload growth, hardware configuration modifications and consolidations and changes in MVS parameters. Provides extensive "what if" capabilities.

CAPTURE/MVS™ System Performance Analysis and Reporting Tool. Analyzes RMF and SMF measurement data for daily performance and exception reporting. Integrated subsystem support for Batch, TSO. Works in conjunction with BEST/1-MVS and interfaces with INFO/BASE.

INFO/BASE™ Capacity Management Data Base. Based on the SAS system, it provides storage capabilities for MVS, VM and data communications performance information. Provides reports such as trending, historical summary and exception reporting.

The BEST in capacity management systems.

BEST/1-VM™ Capacity Planning/Performance Modeling Tool. Similar in use to BEST/1-MVS but specifically designed for VM systems. Provides extensive "what if" capabilities.

CAPTURE/VM™ Report Generating Tool. Provides automated, daily data measurement reduction and analysis for installation performance reporting. Works in conjunction with BEST/1-VM for performance modeling and prediction.

BEST/1-SNA™ Network Capacity Planning/Performance Modeling Tool. Models multipoint and point-to-point networks utilizing SDLC, bisynch and start-stop protocols. Works in conjunction with BEST/1-MVS. Provides numerous reports for network characterizations.

CRYSTAL™ Application Performance Prediction Tool. Analyzes performance characteristics of new applications before programs are written. Provides expected response times and other information used to calculate future operating costs. CRYSTAL/IMS and CICS provide facilities for modeling new IMS or CICS systems.

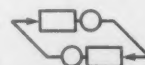
And our users get more than just the best packages . . . they get the best support. The BGS support system begins with hands-on training. Last year alone, over 1,100 DP personnel were trained at our own educational facility -- and thousands more at user sites and conferences around the globe. In addition to training, BGS also gives you complete documentation manuals, automatic software upgrades and technical support when YOU need it.

BGS wrote the original best sellers in capacity management and we are constantly expanding our library to meet your ever-changing needs.

Send for our free booklet "Five Risks in Information Center Capacity Planning", and profit from another BGS best seller.

BGS SYSTEMS, INC.

One University Office Park
Waltham, MA. 02254 617-891-0000



FRANCHISE OPPORTUNITIES.



IT'S NEVER BEEN A BETTER TIME!

The computer industry is experiencing a spectacular growth, by 1990 it will become a 20 billion dollar industry. Computer retailing was one of the few industries not seriously effected by the recent economic crisis.

Now . . . is a good time to consider a franchise opportunity with MicroAge, a leader in computer retailing. MicroAge has a proven "track record" with over thirty franchised stores throughout the United States and Canada. In an industry where experience is crucial, MicroAge has it, with six years computer retail experience and three years in franchising. It's just good sense to go with a leader.

If you're committed to success in computer retailing, it's essential you evaluate the MICROAGE COMPUTER STORES Franchise opportunity. Investment: \$130,000-\$200,000.

For detailed information about MicroAge "Franchise Opportunities," call (602) 968-3168 or write to:

MicroAge Computer Stores Inc.
1425 W. 12th Place
Tempe, AZ 85281

MicroAge
COMPUTER STORE
"The Solution Store"

Speaker Advocates 'Human Side' Of Staffing Programming Projects

By Katherine Hafner
CW Staff

ANAHEIM, Calif. — One of the first questions a DP manager should ask when staffing a software project is whether to define the task first and build a staff around it or whether to define the staff first and build the task around it, according to Alyce Jackson of Technology Research Labs, Inc. in Hawthorne, Calif.

Jackson is a firm believer in the importance of the human side of staffing programming projects.

Speaking at the recent National Computer Conference on "Practices in Staffing Software Projects," Jackson explored various classical staffing methods. The session panel included Frank Emma of TRW Corp. and Marsha Lewin, an independent consultant.

Four Approaches

The first of four traditional approaches to staffing projects, Jackson said, is classical teaming, which can be a blessing because it nurtures the common ground shared by team members, but detrimental if technical managers have no sensitivity to human factors.

The second possibility is "egoless," or democratic, teams, where interaction ensures pride in the end product, but personal ambitions may get in the way of success.

A third method of staffing a project is with a chief programmer at the helm. The strength of this method, Jackson said, lies in the fact that senior people return to the mainstream of technical work. Its weakness lies in the difficulty of finding enough good people to move into chief programmer positions.

Last of all, Jackson noted, is the method of staffing through teams of specialists. The strength of this approach is based on the allocation of talent where it is most needed. But the drawbacks are the difficulty of evaluating performance and the burying of people in too many automated tasks.

Lewin offered a prognosis for the future of software projects. "In the next five years," she said, "I see a decrease in in-house development with more off-the-shelf purchases."

Lewin also sees a change in in-house capabilities, along with increased user implementation and more management involvement.

With many years of experience in staffing software projects to draw upon, panel member Emma suggested

placing people in jobs in which they feel comfortable, developing trust and tolerating mistakes. "Show me someone who isn't making any mistakes and I'll show you someone who isn't doing anything," Emma quipped.

In seeking a project manager, Emma said, one should find someone who is a good

planner, a good decision maker and a skilled leader with a record of accomplishments willing to be held accountable. Team members, Emma said, should be technically competent to do the job, while still perceiving the job as an opportunity.

Finally, Emma warned, cliques should be avoided at all costs.

FLOW_Calc™

THE VAX spreadsheet calculator

\$3500

to try it yourself, call
800-235-6788 (in California, call 805/964-7724 collect)
TWX/TELEX 910-334-1193

The Software Workshop
GENERAL RESEARCH CORPORATION • A Flow General Company
5383 Hollister Avenue • Santa Barbara, California 93111

Cut the cost of data communications with the last word in statistical multiplexers.

Only \$68 a month.

COMDESIGN'S NEW TC-500.

Introducing the quickest way to cut costly phone lines.

With the TC-500, you need just one line for up to 32 remote terminals—without sacrificing throughput. Automatic error control, network statistics and diagnostics are provided as a bonus.

SIMPLY SOPHISTICATED.

ComDesign's touch panel and "ordinary English" display (or optional Executive Port) are as easy to use as your CRT. User-friendly engineering is combined with next-generation technology to give you the simplicity you want and the sophistication you need.

BUILT-IN FLEXIBILITY.

Compatible with virtually any host computer, the TC-500 supports synchronous and asynchronous terminals at all popular

with very attractive quantity discounts. And, in the unlikely event that you will ever need it, you can count on ComDesign's FastFix service for over-

TC-500's unique display gives you immediate access to program, network and diagnostic information for up to 32 synchronous or asynchronous channels.

speeds. It even handles special character formats, a wide variety of flow control conventions, speed conversion, and split speeds to guarantee flexibility in today's changing datacom networks.

POWER, EFFICIENCY AND CONTROL.

ComDesign's multi-processor architecture provides extraordinary throughput and fast echo. The dual data link option brings the added security and efficiency of a second composite link. And TC-500 monitoring and diagnostics, with visual display of channel data, EIA signals, error counts and utilization statistics, are right at your fingertips.

PRICEWISE.

The TC-500 starts at \$1700 for a 4-channel unit,

night unit replacement.

Call today toll free 800/235-6935 (in CA 805/964-9852) or send for a TC-500 brochure and discover how simple it is to put phone bills back in line.

SEND ME THE LAST WORD

ComDesign, Inc.
751 South Kellogg Ave.
Goleta, CA 93117
Call 800/235-6935

NAME _____ TITLE _____

COMPANY _____

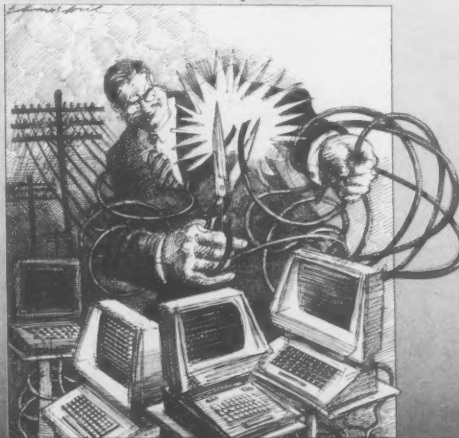
STREET _____

CITY _____ STATE _____ ZIP _____

PHONE _____

ComDesign

Calling the cost of data transmission down.



ComDesign's TC-500 Statistical Multiplexer. Offers the ability to connect up to 32 terminals.



TOLL FREE (800) 235-6935

VMAP

ANALYSIS

by the original Author

If you're running VM/370 and are having performance problems or are considering an equipment upgrade, Chuck Tesler can review your VMAP reports, help you understand what they indicate, and recommend effective solutions.

We offer you this service by mail to save you time and unnecessary expense. On-site consulting is not needed and overnight package carriers ensure quick turnaround.

For further information, just call Chuck at (213) 764-4555, or write: VM/CMS Consulting Services, Inc., 7248 Bellaire Ave., No. Hollywood, California 91605 U.S.A.

A joint offering of VMCS and Adesso

Integrated Solutions Seen Best Bet in Financial Systems

By Robert Batt

CW West Coast Bureau

ANAHEIM, Calif. — Users should demand integrated solutions from vendors when looking at distributed financial planning systems, according to Frank Infante, engineering manager at Digital Equipment Corp.

Speaking at a recent National Computer Conference session held here, Infante said users want software that allows them to do multiple tasks within the same environment. "This is the direction that software is moving and it is the way to more powerful applications. Therefore, users should demand it in their systems," he said.

This will require software developers and computer vendors to standardize their products to allow for integration between different equipment. "More applications that allow for this integration will be forthcoming, and this will improve the productivity and effectiveness of end users," he predicted.

Infante argued that with end users demanding systems that have a uniform way of doing things, vendors will need to service and support them more thoroughly than in the past. To the degree that the DP department is involved, it will be focused on what end users are going to do, he said.

Looking ahead to future technology, Infante predicted that systems which allow users to handle voice integration will be a major asset in increasing productivity. Local-area networks will provide the capability for machines to work in clusters, enabling users to move data from one system to another without translation problems.

But the DEC executive admitted there is a long way to go. "As yet there are no vendors that provide such total solutions enabling one product to be linked with any other," he told his audience.

Looking for a System

Also speaking at the session was William Thomasmeyer, vice-president of microcomputer software for Ross Systems, Inc., a Palo Alto, Calif., manufacturer of financial software packages. Thomasmeyer said there are several things to look for in a financial modeling system. These include English-like commands and references to the matrix elements that form the basis of electronic spreadsheets, immediate and constant responses to user commands and menu-oriented or question-and-answer formats for creating financial models.

"Business managers want to analyze and evaluate their operations without waiting for central DP resources," he said. "They want to operate the equipment themselves. This means that DP managers must set common hardware standards and provide a systematic approach to distributed financial planning," he asserted.

Thomasmeyer said it is important for vendors to provide systems with open-ended computational capabilities that exceed the built-in features of the modeling language. This allows users to deal with any unique application problem they may have.

Furthermore, he noted, users in large Fortune 1,000-type organizations often require multilevel hierarchical, consolidated financial statements. Software needs to be flexible enough to take this into account.

The optimum solution, he suggested, is to provide a system that combines the strengths of the host computer with the strengths of the personal computing environment.

"The key to productivity," he concluded, "is that everyone uses the same language and has access to the same central data base on both micros and mainframes."



- BDS/Dataproducts Plug-Compatible Printers
- Built for Handling Continuous High-Volume Output

IBM-DEC-HP BURROUGHS

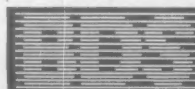
- Since 1975, the Largest Independent Supplier of Plug-Compatible Printer Systems
- Over 5,000 Systems Installed
- Complete Line of High Quality Daisy Wheel, Matrix and Band Printers. 55 CPS to 2000 LPM
- 30-50% Savings
- Quick Delivery (30 Days or Less)
- Reliability Built-In (BDS Controllers and Interfaces)
- Low Maintenance Cost
- TRW Nationwide Service
- Price Includes Installation and 90 Days Parts and Labor Warranty

I would like more information on plug-compatible printers

☐ 55 CPS
Daisy Wheel Printer

☐ 80-300 CPS
Matrix Printer
☐ 300-2000 LPM
Band Printers

Name _____
Title _____
Company _____
Address _____
City _____ State _____ Zip _____
Phone (_____) _____



(415) 326-2115

BDS Corporation
1120 Crane Street
Menlo Park, CA 94025

U.K. (734) 730025 Australia (03) 241-8901

The first thing Wang installs is confidence.



Wang support. It's the human link that makes office automation work for everyone in your office. And it begins even before the first Wang system is installed.

Wang support starts with our written commitment to a successful installation. It includes pre-installation planning from our support people to help realize the best use of our products in your environment. After installation, we offer hands-on training, documentation, multi-site account guidance, and advanced applications and technical assistance where and when you need it.

Our commitment to customer support also includes Wang Laboratories Certified Supplies, and programs provided by Customer Engineering through the WangCare total service philosophy. And like all Wang support programs, they're available worldwide.

Wang support. It's the key that turns office automation into increased productivity and profitability for everyone.

For information, call 1-800-225-9264, or write to Wang Laboratories, Inc., Business Executive Center, One Industrial Avenue, Lowell, MA 01851.

WANG

The Office Automation Computer Company

Long-Range R&D Tech Plans Needed U.S. Seen in Danger of Losing Top Spot to Japan

By Tom Henkel
CW Staff

ANAHEIM, Calif. — Unless the U.S. makes some quick, long-range plans to preserve its dominance in the computer market, it will lose its top spot. According to experts in artificial intelligence, high-speed numerical processors and defense systems, the Japanese have put in place long-term development programs which, unless U.S. computer manufacturers act soon, will make Japan the computing leader within 10 years.

Those were the views expressed by panelists in a session on "Fifth-Generation Computers" at the recent National Computer Conference here. The only hope, these observers contend, is for the U.S. government to help organize and focus the wealth of knowledge in U.S. companies. If these companies are not willing to

participate in such a venture, they should be forced into it.

Consortiums of high-technology companies in the UK and Europe are working feverishly to develop what has become known as the fifth generation of computers. But the biggest threat to U.S. supremacy is clearly Japan, noted David H. Brandin, an expert on worldwide research and development projects with SRI International, Inc.

Japan's Ministry of International Trade and Industry (MITI) is already into the second year of its 10-year development project aimed at taking control of the worldwide information processing industry by the 1990s, according to Prof. Edward Feigenbaum, an artificial intelligence expert at Stanford University in Palo Alto, Calif.

Miti's focus, Feigenbaum said, is to figure out which areas of technol-

ogy will be most pressing 10 years from now and start developing those technologies before the rest of the world. Miti has principally targeted "the sleepy, sluggish U.S. companies," as the force to beat in the world high-technology market, Feigenbaum noted, adding that Japan is using a similar strategy that boosted it to a position of power in the auto industry.

But the consequences of losing dominance in the world technology market are potentially far more serious for the U.S. than sliding from the number one spot in the auto market, noted Adm. Bobby Inman (USN Ret.), president of the Microelectronics and Computer Technology Corp. The potential for high-technology products far exceeds the potential for the auto industry over the next 20 years. Consequently, loss of control over technology could have significant effects on the U.S. economy, he stated.

Poised for Great Strides

The Japanese appear to be poised to make great strides in almost every area of computer technology, Feigenbaum said. Development projects now under way in Japan include artificial intelligence, computer-aided design and manufacturing and large-scale numeric processors, he added. Feigenbaum, as well as Dr. Sidney Fernbach, one of the principal developers of Control Data Corp.'s line of supercomputers, noted that U.S. manufacturers are too concerned with yearly profits. They therefore pass up opportunities for future technological developments in favor of short-term profits.

Noting that IBM and its \$1.6 billion research and development budget is more than Miti has for a 10-year development effort, Feigenbaum said that since IBM, as well as other large computer compa-

nies, does not share the results of its research, many technological developments go unused. As an example, Feigenbaum noted the strong advances made in artificial intelligence by IBM during the late 1950s. For some reason, he said, IBM decided not to pursue those AI projects, thus slowing the development of AI in the U.S.

The lack of a directed U.S. technology research program could also hurt national defense, noted Dr. Robert E. Kahn, a researcher with the U.S. Department of Defense (DOD) Advice Research Project Agency in Arlington, Va. Kahn said if the U.S. loses its prominence in the technology industry, the DOD could be forced to buy technology items from other countries, creating a potential supply problem.

IBM Group Aims At Construction

CHICAGO — Common, an IBM computer users group with over 2,200 installations worldwide holding memberships, recently established a project within its organizational structure to address the special needs of construction companies.

As with other Common special interest groups, the construction group will offer attendees of Common conferences a number of sessions dealing with hardware and software systems that provide, in this case, construction-related solutions. The sessions should be of interest to both technical and management personnel, according to a Common spokesman.

Common conferences are slated for the spring and fall in various U.S. cities. The fall meeting will be held Oct. 22-26 in Phoenix.

Further details on the group can be obtained from Common headquarters at Suite 1717, 435 N. Michigan Ave., Chicago, Ill. 60611.

Course to Cover Productivity

NAPERVILLE, Ill. — Deltak, Inc. has announced a video journal series on productivity measurement.

The four-course series, called "Measuring Programmer Productivity," was designed for data processing managers, application project managers, designers, systems analysts and programmers. Data processing auditors may also benefit from the series, Deltak said.

Topics covered include a basic definition of terms, why many productivity measurement attempts fail, an overview of basic measurement techniques, a structured method of performance measurement and techniques for maintaining an ongoing measurement program, according to Deltak.

The courses cost between \$50/mo and \$125/mo or can be purchased for \$1,750/course. Deltak is located at 1751 W. Diehl Road, Naperville, Ill. 60566.

BRYCE'S LAWS ON INFORMATION SYSTEMS

"How a system is implemented is of little importance
if it solves the problem efficiently."

This is one of the laws embodied in the "PRIDE"-Automated Systems Design Methodology. "PRIDE"-ASDM is an integrated and automated approach for engineering and manufacturing Information Systems. It is a straightforward business approach that is governed by the inherent principles of systems design & development. For more information on "PRIDE"-ASDM and a free poster on "Bryce's Laws", write:



m. bryce & associates, inc.
1248 Springfield Pike • Cincinnati, Ohio 45215
Tel: 513/761-8400

"Software For the Finest Computer-The Mind."

GOOD COMPUTER STUFF SOME NEW— CHEAP!!! GREAT FOR PERSONAL COMPUTERS

DEC® PDP11/LSI MODULES—NEW

DH11-AD	\$5,100	MS11-LB	1,750
DL11-WA	432	MS11-LD	1,750
DLV11-F	126	MSV11-DD	275
H9270	60	MXV11-AA	200
H9273-A	236	MXV11-AC	275
H9802-EA	1,500	PB11K-AA	450
KD11-HD	700	RMD5-P	300
MK11-BE	2,500	QJDS9-CV	500
MK11-BF	2,500	RX01K-10	25
MRV11-BA	150	W9512	30

DEC® TERMINALS

LS-120AA	USED	\$795
VT100 W. graphics	USED	1,775
VT132	USED	895
VT52-AA or AE	USED	1,195
VT52	USED	1,595
LA180 W. par. int.	USED	955
LA36	USED	380

DEC® PERIPHERALS—NEW

LA36 EIA	85
Opt. Mig. ud.	85
top of form	135
auto line feed	72
num. keypad	85
APL	225
LA120 forms contr.	100

SOFTWARE FOR APPLES® & FRANKLINS

Acewriter-w/p.	\$65	VisiTerm	72
Visi Schedule	\$195	VisiFile	165
DeskTopPlan	\$65	VisiDex	165
VisiTrendPlot	\$95	VisiCalc	165

FRANKLIN ACE—NEW

ACE 1005	395
Disk dr. & contr.	399
Disk dr. w/o contr.	335

COMPUTER DEVICES

1203. REFURB.	\$864	1203. USED	725
---------------	-------	------------	-----

DIABLO

1620-1	USED	\$695
1640-1	USED	1,195
1650	USED	1,295
DTC-300 (like 1620)	USED	595

LEAR SIEGLER

ADM-3A	USED	\$350
ADM-32	USED	475
ADM-31	USED	495
ADM-32 12"	NEW	750
ADM-36 12"	NEW	880

TECHTRAN

8400	NEW	\$895
8400	USED	295
815	USED	225
8420	NEW	695
8421	NEW	795
950	USED	295
951	USED	325

MISCELLANEOUS TERMINALS

Informor D-304	USED	\$295
Teletype 43AAA	USED	595
TeleVideo 920B	USED	634
TeleVideo 912B	NEW	575
Execuport 3000	USED	295
Execuport 3810	USED	295
Datamedia ColorScanNEW		1,195
Dig. Eng. color graph.NEW		1,065

TEXAS INSTRUMENTS

NEW		USED	
TI-785	\$1,295	TI733ASR	695
TI-785 APL	1,195	TI-733KSR	595
TI-787	1,632	TI-745	395
TI-820KSR	1,495	TI-743RO	395

MODEMS & COUPLERS

AJ	NEW	\$450
ADAC 1200	USED	250
1245	USED	395
242-36	USED	100
243	NEW	100
1234	USED	395
Ventel 103	USED	80
Comdata 300	USED	80
Racal-Vadic		
103MA	USED	150
103MB	USED	190
355P	USED	200
3434	USED	395
Ventel 434	USED	25

DEC SYSTEMS—NEW

11/34A-YF 256KB	\$10,000
D315A-RZ	4,500

Dealers call for quantity quote. Ask for Call or Fax
TERMINAL BROKERS CO.
2001 West Main St.
Suite 304, Stamford, Ct 06907
203-964-9331

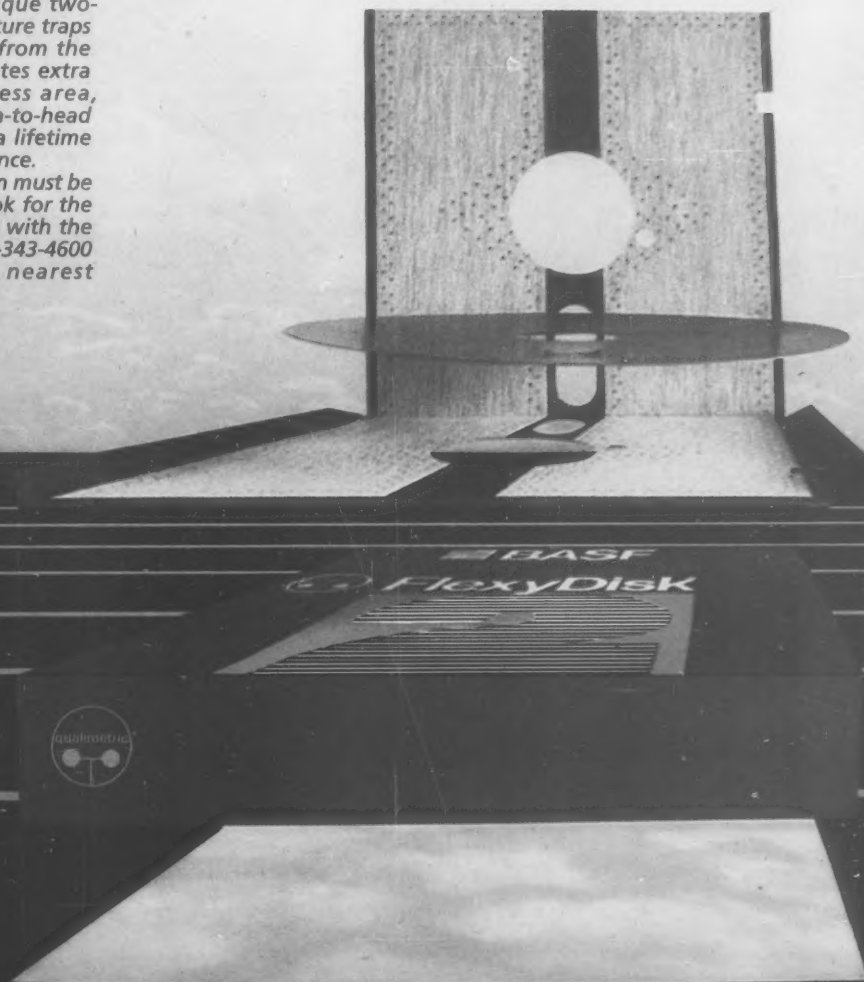
* Registered trademark of Digital Equipment Corp.
Apple Computer Inc., VisiCorp & Datal Engineering, Inc.

BASF QUALIMETRIC™ FLEXYDISKS® BUILT FOR ETERNITY - WARRANTED FOR A LIFETIME.

BASF Qualimetric FlexyDisks® offer you more...an extraordinary new lifetime warranty. The BASF Qualimetric standard is a dramatic new international standard of quality in magnetic media...insurance that your most vital information will be secure for tomorrow when you enter it on BASF FlexyDisks today.*

We can offer this warranty with complete confidence because the Qualimetric standard reflects a continuing BASF commitment to perfection...a process which begins with materials selection and inspection, and continues through coating, polishing, lubricating, testing, and 100% error-free certification. Built into our FlexyDisk jacket is a unique two-piece liner. This BASF feature traps damaging debris away from the media surface, and creates extra space in the head access area, insuring optimum media-to-head alignment. The result is a lifetime of outstanding performance.

When your information must be secure for the future, look for the distinctive BASF package with the Qualimetric seal. Call 800-343-4600 for the name of your nearest supplier.



ENTER TOMORROW ON BASF TODAY



BASF

*Contact BASF for warranty details. © 1982 BASF Systems Corporation, Bedford, MA.

Exec Explains Bank's Steps to Up Productivity

By Bob Johnson

CW New York Bureau

ANAHEIM, Calif. — As the cost of DP labor exceeds that of hardware, methods of increasing the productivity of DP personnel are becoming increasingly important to computer professionals. At a recent session here at the National Computer Conference dealing with how to help DP executives cope with productivity problems, panelists discussed ways of getting the best results from their workers.

One speaker, Bill Selmi, a vice-president of the Central Systems Group of the Crocker National Bank in San Francisco, said that his firm had no real answers, but has developed an approach to battling the productivity problem.

"We have found that it is easy to spend budget dollars on seeking solutions, but that method does not always yield results," Selmi said.

The speaker explained that his bank had set up a task force of six DP managers to look at productivity. The group listed three objectives, including identifying areas that needed improvement, seeing what was available on the market and investigating if the proposed improvements were measurable.

"We really struggled to find where productivity improvements should be installed throughout our DP life cycles. We decided to go to our in-house DPs to find out," Selmi noted.

A 30-question questionnaire was distributed to 300 of the bank's DPs, Selmi said. The questions were designed to find out how important personnel felt the areas of programming tools, technical environment, systems design, hardware, staff and management were to the successful and productive operation of DP.

The weighted results of the questionnaire revealed five areas that the bank determined to be the most significant in increasing pro-

ductivity. Those areas included the quality of user requirements, documentation, quality of internal design (change control), the adequacy of on-line testing response time, the quality of external design and project management and control.

In response to the survey's findings, Selmi said that Crocker identified four steps of action to answer its DPs' questions and to boost the

company's productivity.

The first step was to give on-line programming capabilities to Crocker's programmers. "About 35% of our programming workstations are now capable of permitting debugging actions. We are also looking at possible integration of personal computers to enhance this kind of work," Selmi said.

Project control, the second step, was also addressed by

the Crocker task force. Methods for estimating project techniques, tools for project scheduling, project life-cycle tracking and quality assurance were examined.

The third step was education. "We found the education and development of the DP project manager and the end user as the two places of most importance in education. Training the DP in project management and

training the user in DP and project development appear to be positive productivity approaches," Selmi maintained.

The fourth step involved the establishment of quality circles. This step was initiated to enhance DP productivity. The speaker said that selected DP topics were examined, including operations, interfaces, standards and DP security.



IBM SERIES/1 RPS USERS

- Get your application up and running in days
- Experienced personnel
- Best Available application development tools for the Series/1

REITER SOFTWARE

211 Sutter - 4th Floor
San Francisco, CA 94108
Call Collect
415-956-1575

Same Capabilities for EDX

Systems Development Change Seen Inevitable

By Robert Batt

CW West Coast Bureau
ANAHEIM, Calif. — The need for programmers to develop user-friendly systems will result in fundamental changes in systems development, attendees of the recent National Computer Conference were told by Dean Wardman, manager of IBM's Santa Teresa Laboratory.

Speaking at a session entitled "Managing Computer

Change," Wardman said it is essential to raise the consciousness of programmers to the needs of users. "The challenge is to develop programs for users who have no data processing experience, and such programs have to be attractive, labor-saving and with interfaces that are very simple," he noted. This, he asserted, will lead to two major changes in focus:

- In software develop-

ment, programmers must change their focus from functionality to usability of systems by non-DP personnel.

- In their interactions, programmers must focus on the end user in the information center as well as DP management.

It is vital, Wardman claimed, to establish some kind of formal plan for usability by which program-

mers can track their results. "It is important to test for usability and be capable of change as the product is being tested. Programmers need to choose testers who are qualified and independent users. They must pay attention to the feedback before the project is let loose." The prototyping of programs is one of the best ways to produce user-oriented systems.

Discussing systems development life cycles, another session speaker, Gordon Davis, a professor at the University of Minnesota, said it is important to estimate the degree of uncertainty in any particular project before deciding on a course of action. "It is necessary to define the characteristics affecting uncertainty. These include the number of users and analysts, the utilizing system and how complex the application is," he said.

Using this approach, he argued, it is possible to get a picture of the degree of uncertainty from which the DPer can select strategies and methods. Davis outlined a number of approaches to determining user requirements based on the degree of project uncertainty.

Discussing the problems faced by DP professionals in project development, Steven Alter, a consultant with Consilium Associates of Palo Alto, Calif., warned the conference attendees against putting users in charge of development projects.

"Managers of technical work must understand the work they are managing. To put a user in charge of a project in which he does not understand all the technical aspects can lead to trouble," Alter observed.

Users, he said, do not participate in projects in a systematic way. They do not understand the technical implications of systems changes, do not appreciate the effort needed to change large systems, do not understand models and refuse to read specs.

"All this leads to a forlorn hope syndrome among data processing professionals where they sit around knowing things are going wrong but not knowing what to do about it," he said. The solution, he maintained, is to carry out a serious continual evaluation of why the project should be successful, rather than manage it according to budget and schedule.

With the widest range of solutions for the office, IBM offers the widest variety of ways for everyone to share all kinds of information—text, data, voice and images. For example:

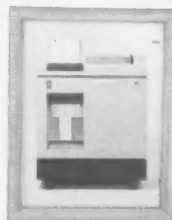
The IBM Displaywriter can give you a total picture of what's going on at the office. The best-selling stand-alone text processor can process data as well as text.

Connect your Displaywriter to your host computer and secretaries can electronically share information—mail, files, calendars—with other professionals using IBM Personal Computers or terminals.



The IBM 8100 Information Processor can be a data processor and an office system at the same time. The IBM 8100 is a powerful distributed data processor. And with IBM software, it can create an office system for you as well.

The IBM Scanmaster I lets your computer send images to many locations at once. Scanmaster I lets your host computer electronically store and retrieve images such as graphs, charts, even handwritten memos. And distribute them to many Scanmasters simultaneously.



The IBM 6670 laser printer distributes high-quality documents at electronic speed. The IBM 6670 can be connected to any IBM office system or host computer. Which means you can send documents to many locations. And each one is a laser-printed original.



The IBM Audio Distribution System makes sure your telephone messages are received. The Audio Distribution System eliminates "telephone tag." It lets you send voice messages to one or many people at the same time. And lets you know when those messages have been received.



With the widest range of solutions for the office and the experience to tie them all together, we can design the right office system for you. Just call your IBM representative, send in the coupon, or call the toll-free number. We'll be happy to help you make the right connections.

Free Brochure: IBM Office Systems

Write today to: IBM, DRM, Dept. IP3, 400 Parson's Pond Drive, Franklin Lakes, New Jersey 07417.

☐ Please send me a free brochure about IBM Office Systems.

☐ Please have an IBM representative call me.

NAME _____ TITLE _____
COMPANY _____
STREET ADDRESS _____ CITY _____
STATE _____ ZIP _____ BUSINESS PHONE _____

IBM

90

Call IBM Direct 1 800 631-5582 Ext. 90. In Hawaii/Alaska 1 800 526-2484 Ext. 90.

All U.S.
Sales/Use Tax Rates
on magnetic tape...



Vertex Systems Inc.
998 Old Eagle School Rd., Wayne, PA 19087
215-687-9060

is Experience the difference

AT OUR NOMAD2 INFORMATION CENTER SEMINARS

The NOMAD2 INFORMATION CENTER is a unique service created by National CSS, the information services company of The Dun & Bradstreet Corporation. For 16 years we've been running a business which operates on the same basis as an information center: providing and supporting end-user computing through interactive timesharing.

The NOMAD2 INFORMATION CENTER embodies ALL the components you need to run an effective and productive information center.

It consists of:

- The NOMAD2 4th Generation Language/DBMS Enhanced To Run Under VM/SP
- A Comprehensive Training Program For Your Information Center Staff
- In-depth End-User Training Programs
- Complete End-User Documentation And Training Materials

Whether you have an established information center, or are in the process of investigating the idea, we'd like to tell you how our experience and the NOMAD2 INFORMATION CENTER can help you.

Our **FREE** seminars will provide you with a closer look at the information center concept – the best way to deliver the data processing promise of the 80's, end-user computing.

Our Agenda: The Information Center

- Support Staff Selection
- Support Staff Training
- Business Procedures
- Profitability/Professionalism
- Data Considerations
- End-User Training
- Marketing/Promotion

NOMAD2: Meeting the Demands of End-User Computing

- "Application Development Without Programmers"
- Easy To Learn
- Consistent Syntax
- Report Writer
- Effective Interactive Data Analysis
- Graphics

A Demonstration

An On-Line "Tour" Of Application Development With NOMAD2

Discussion

Opportunity To Discuss Information Center Concepts And Procedures With Industry Peers

Locations and Dates:

• Chicago, IL	April 20	• Arlington, VA	May 11
• Boston, MA	April 22	• Milwaukee, WI	June 2
• New York, NY	April 27	• Dearborne, MI	June 14
• Saddle Brook, NJ	May 3	• Santa Clara, CA	June 14
• Danbury, CT	May 5	• Rochester, NY	June 15
• Atlanta, GA	May 10	• Newport Beach, CA	June 15
• Charlotte, NC	May 12	• San Francisco, CA	June 16
• Philadelphia, PA	May 17	• Cincinnati, OH	June 21
• Los Angeles, CA	June 17	• Houston, TX	June 21
• Pittsburgh, PA	May 19	• Dallas, TX	June 22
• Cleveland, OH	May 25	• St. Louis, MO	June 23
• Seattle, WA	May 26	• Paris, France	May 19

Please fill out the attached registration form and return it to:

NATIONAL CSS
187 Danbury Road
Wilton, CT 06897
Attn: Charles Graham

Or Call 800-243-2726 (in CT. call 800-882-0004).

National CSS

DB a company of
The Dun & Bradstreet Corporation

NOMAD2 INFORMATION CENTER Seminar Registration

☐ Please reserve ____ seat(s) at your **FREE** NOMAD2 INFORMATION CENTER SEMINAR to be given in (City) _____ on (Date) _____

☐ Please send NOMAD2 INFORMATION CENTER materials.

Name _____ Position _____

Company _____

Address _____

City _____ State _____ Zip _____

Telephone _____

Aiken Portrayed as Uncompromising, Energetic

By Marguerite Zientara
CW Staff

ANAHEIM, Calif. — It's no secret that Howard H. Aiken oversaw the design and development of the electro-mechanical Mark I computer in 1944 and of three subsequent large-scale models. What may not be so clear is what made Howard Aiken — and the Harvard Computation Laboratory — tick back in the days of World War II. Two Pioneer Day sessions at the recent National Computer Conference here attempted to shed some light on the man and his motivations.

Presented by a stellar collection of panelists, most of whom worked with Aiken during the Mark I, II, III and/or IV era, the sessions brought to light sometimes conflicting views of the man. Not open to dispute was his conservative approach to engineering, his commitment to accuracy and his belief in the vast potential for computer applications in business as well as science.

Besides technological innovation, one of Aiken's greatest contributions was his stimulation and inspiration of his graduate students. One of those students, panelist Kenneth Iverson of I.P. Sharpe Associates, went on

to develop APL.

"Aiken stimulated students with the idea that there was much work to be done and that they had the ability to do it," Iverson said. "He also provided a feeling of adoption into the fold, with easy and intimate access to people more experienced in one's chosen field."

On the other hand, "even though one always got a patient hearing and a careful explanation in answer to any question," Iverson said, "one couldn't help feeling that one was asking stupid questions."

'Mephistophelian Look'

Aiken was "forceful, energetic, self-assured; he dominated any room he entered, and he had a positively Mephistophelian look," recalled panelist Fred Brooks Jr. of the University of North Carolina, who went on from Harvard to design the 360 at IBM. "He liked spunk," Brooks added, "so those of us who were refractory and difficult got along with him quite well."

On the flip side of that coin, however, was what Brooks speculated might have been Aiken's major "character flaw" — he was "not unwilling to unleash his full powers on the little people, those not as powerful as he, such as waiters or airline clerks."

Although Aiken was relentless in his demands on those working with him, "he respected our results, conclusions and our writings," Brooks noted. Brooks observed that it was not important to Aiken to be part of the "clubs" of computer researchers active at various universities — and in fact, "it may have been important to him not to be."

With "very important" work being done at MIT, Princeton and elsewhere at the time, Brooks said, "I believe the field would have advanced faster — as it did in physics where the research was generally known by everybody — if we'd shared the research."

Nothing Insular

Anthony Oettinger, still at the Harvard Computation Laboratory (now called the Aiken Computation Laboratory), pointed out that while Aiken "was not clubby in the standard sense, he had a lot of fingers in a lot of different pies. There was nothing insular about him."

Furthermore, "none of us ever caught him in any slightest breach of integrity, and that's more than one could say for a hell of a lot of people around."

Maurice Wilkes, a staff

consultant for Digital Equipment Corp. and a pioneer on the Edsac computer at Cambridge (England), gave some unique observations as the only panelist who was not at Harvard with Aiken. "I was rather afraid of Aiken; I admit it," Wilkes acknowledged. However, by 1950, "Aiken was no longer in the mainstream of development work, and we didn't look to him then as a leader."

"Furthermore, attempts made here today to say that he was right and we were all wrong are not borne out at all," he said. In addition, "Aiken was technologically backward," he claimed.

"Aiken's technological aims seemed to us very pedestrian. Aiken did dominate, but he didn't seek to have yes-men around him," Wilkes recalled.

"He chose outstandingly able men, although they weren't allowed much exposure. When publications came out of the laboratory, they were attributed to 'the staff of,' and everyone's name was listed alphabetically, with Aiken's, of course, at the head of the list," he explained.

"Aiken was a man of action as opposed to intellectu-

alization, was a superb organizer and a leader of men, if autocratic," Wilkes said. "He knew exactly what he wanted and could get the support he needed; he never let his

sponsors down.

"Even though he could be blunt and uncompromising," he concluded, "I also found out what a delightful companion he could be."

IMMEDIATE DELIVERY 300 LPM PRINTERS

LOWER YOUR COST OF OWNERSHIP WITH PRICES **\$4995** STARTING AT.....

AND MAINTENANCE FROM \$36/MONTH



Compatible With Your:

- IBM 2780/3780 RJE
- IBM 3270 BSC Coax
- IBM Series I
- Burroughs Poll/Select
- Also DEC, Datapoint, Data General, Tandem, HP, and many others

800-327-3955

Innovative™
network data communications

See us at ICA
in Anaheim
June 1-3, 1983
Booth No. 1374

INNOVATIVE ELECTRONICS, INC.

4714 NW 165th Street, Miami, Florida 33014

(305) 624-1644

Telex: 807121

Softfair Program Slated for July, To Focus on Tools

WASHINGTON, D.C. — Softfair, a conference on software development tools, techniques and alternatives, will be held July 25-28 at the Hyatt Regency here.

Many of the products that will be demonstrated reportedly are state-of-the-art research tools previously unseen by more than a handful of individuals directly involved with their development.

The conference program will be kicked off with a keynote address by former astronaut Capt. James A. Lovell Jr., who currently is senior vice-president of Centel Business Systems. He will address the subject of software and computer control of life-critical systems.

Other sessions include "Tools and Methodologies: The Perfect Match or the Odd Couple?" and "Impact of Future Technology."

The conference is being sponsored by the Institute of Electrical and Electronics Engineers (IEEE) Computer Society, which can be reached through P.O. Box 639, Silver Spring, Md. 20901. Full conference registration is available for \$200 (IEEE members) and \$250 (nonmembers) before July 11.

This advertisement is neither an offer to sell nor a solicitation of an offer to buy these securities. This offering is made only by the Prospectus.

New Issue

May 11, 1983

714,000 Shares

CONSCO
Enterprises, Inc.

Common Stock

Price \$7.00 per Share

Copies of the Prospectus may be obtained from any of the several Underwriters, only in states in which such Underwriters are qualified to act as dealers in securities and in which the Prospectus may be legally distributed.

Boettcher & Company

Allen & Company
Incorporated

Ladenburg, Thalmann & Co. Inc.

Advest, Inc. Blunt Ellis & Loewi
Incorporated

R. G. Dickinson & Co.

Gruntal & Co.

Jesup & Lamont Securities Co., Inc.

McDonald & Company

Prescott, Ball & Turben, Inc.

Stephens Inc. Stifel, Nicolaus & Company
Incorporated

Baird, Patrick & Co., Inc.

J. J. B. Hilliard, W. L. Lyons, Inc.

Moore & Schley Capital Corporation

Raymond, James & Associates, Inc.

J. C. Bradford & Co.,
Incorporated

First of Michigan Corporation

Interstate Securities Corporation

Johnson, Lane, Space, Smith & Co., Inc.

Neuberger & Berman

The Ohio Company

Robinson Humphrey/American Express Inc.

Tucker, Anthony & R. L. Day, Inc.

Baker, Watts & Co.

Hoare Govett Limited

A. E. Masten & Co.
Incorporated

A. G. Edwards & Sons, Inc.

Robertson, Colman & Stephens

Butcher & Singer Inc. Cowen & Co.

Furman Selz Mager Dietz & Birney
Incorporated

Janney Montgomery Scott Inc.

Legg Mason Wood Walker

Piper, Jaffray & Hopwood
Incorporated

Rooney, Pace Inc.

Wheat, First Securities, Inc.

First Albany Corporation

Institutional Equity Corporation

Morgan, Keegan & Company, Inc.

Wood Gundy Incorporated

New Class of Information Analysts Predicted

By Jeffrey Beeler

CW West Coast Bureau

ANAHEIM, Calif. — Application development will likely disappear as a separate DP job category by the '90s, but for the time being, application programmers still have many more employment opportunities than their systems counterparts.

That was the conclusion reached by Gladys Brantley, Interfet Corp.'s vice-president and controller, who spoke at a recent National Computer Conference session dealing with "Career Development in the 1980s."

Brantley predicted the emergence of a new class of systems professionals, which she called information analysts.

Unlike systems employees with traditional program-

ming/analysis backgrounds, information analysts will come primarily from the business rather than the technical ranks, although the majority will boast at least a smattering of formal DP training.

In the not-too-distant future, the advent of this new class of computing professionals will have profound consequences for the application programming job slot as it is traditionally defined, Brantley predicted.

By the '90s, the burden of developing new user software will be borne much more heavily by the emerging information analysts than by conventional application programmers, Brantley said.

One of the main roles of the information analysts will

be to develop new applications by "cobbling together off-the-shelf software packages," Brantley predicted.

Because of the rise of the information analyst class, end users soon will no longer have a pressing need for today's typical application programmers, she said.

If application programming fails to vanish from the scene altogether, it will at least shrink substantially or evolve to become an increas-

ingly design- and analysis-oriented function, according to Brantley.

At present, however, application programmers can still find work with relative ease, even though recent college graduates typically prefer systems programming, primarily because it has been "glamorized" in undergraduate computer science courses, Brantley said.

Brantley predicted the eventual emergence of soft-

ware engineering as a full-fledged discipline in its own right.

"Software technology is quickly becoming an engineering field in the same sense as architectural or aeronautical engineering," she said.

Software engineering will require extensive formal education and will encompass a multitude of highly technical specialties, she said.

Panelists Call for More Research On U.S. Resiliency to DP Disaster

By Patricia Keefe

CW Staff

ANAHEIM, Calif. — Despite a recently released

study that found it unlikely that the U.S. would come to a screeching halt in the face of large-scale computer failures, more research is needed to determine the level of U.S. vulnerability to DP disasters, panelists at a recent National Computer Conference seminar here agreed.

Participating in the session were moderator Rein Turn, a professor at California State University; Prof. Lance Hoffman, George Washington University; Blake Greenley, Internal Technology Group of Citibank New York; Sheila Brand, an adviser on computer technology to the Inspector General of the U.S. Department of Health and Human Services; and Dr. Willis Ware, Rand Corp.

Turn recently chaired an American Federation of Information Processing Societies, Inc. (Afips) panel that produced a report entitled "Observations on the Resilience of the U.S. Information Society." According to the report, adverse effects of computer failures include sudden disruptions or long-term erosion of daily lifestyles, irrecoverable disruption of the economy, paralysis of national finance systems, decline in the standard of living, erosion of constitutional rights and increased dependence on foreign powers.

According to Turn, these effects could result from any one or a combination of the following computer crises: a sudden loss of a large number of computer systems; capture of systems by a terrorist group, sabotage or subversion; an accumulation of errors; deliberate misuse of computer capabilities; and irrecoverable computer dependence.

As a precautionary measure, Turn encouraged the examination of a variety of applications to determine their level of vulnerability.

Overall, the Afips report found the U.S. to be resilient

"thus far" to computer catastrophes. However, Turn pointed out that while the U.S. appears to have satisfied a number of resiliency factors, computerization is increasing, corporate memories may be fading, contingency planning has been conducted on a limited scale and DP disasters to date "have not been convincing" in terms of their devastation potential.

To combat this erosion of U.S. resilience, Turn suggested that:

- Public awareness of computer vulnerabilities be increased at the same time its level of computer sophistication is increased.

- Industry sectors plan for resiliency at a functional level.

- Technical measures be developed to forestall vulnerability.

- Resilience be a part of the information policy of the U.S.

- Guidelines and standards for resilience be developed.

- The problem be continually monitored by industry associations, which must develop plans to maintain and enhance resilience.

Despite support for the report's results from two other panel members, Hoffman took "strong issue" with some of its conclusions, asking the "classical question to risk assessment: How safe is safe enough?" He criticized the report for what he termed its vagueness and "weasel wording," suggesting that the report creates more questions than it actually answers.

Hoffman questioned how much of society had to be affected before vulnerability became a problem and also asked how long an incapacitating computer failure had to be in order to be called "paralyzing." He also charged that society does not currently have sufficient legal safeguards to help enhance resilience.

WHAT IS FASTER AND MORE POWERFUL THAN A TSO CLIST??

PROC MAN!

PROC MAN:

- COMPILES TSO CLISTS
- REDUCES CLIST RUN TIMES
- GREATLY REDUCES CLIST CPU OVERHEAD
- PROVIDES MULTI-LEVEL SECURITY BY CLIST
- ALLOWS EASY ADDITION OF USER FUNCTIONS
- REQUIRES NO SYSTEM OR CLIST MODIFICATIONS
- ENHANCES THE SPF DIALOG MANAGER

Call or write for details

1735 SOUTH BROOKHURST
ANAHEIM, CA 92804
PHONE: (714) 991-9460
TELEX: 181592



Software Corp.

This announcement appears as a matter of record only.

\$10,600,000

MASSCOMP

Massachusetts Computer Corporation

Convertible Preferred Stock

The undersigned arranged for the private placement of these securities with institutional investors.

HAMBRECHT & QUIST

INCORPORATED

New York

San Francisco

London

Los Angeles

Menlo Park

April 28, 1983

The Microcomputer User Learning Curve

By Thomas J. Gambino
Thomas W. Johnson
Diane D. Wilson

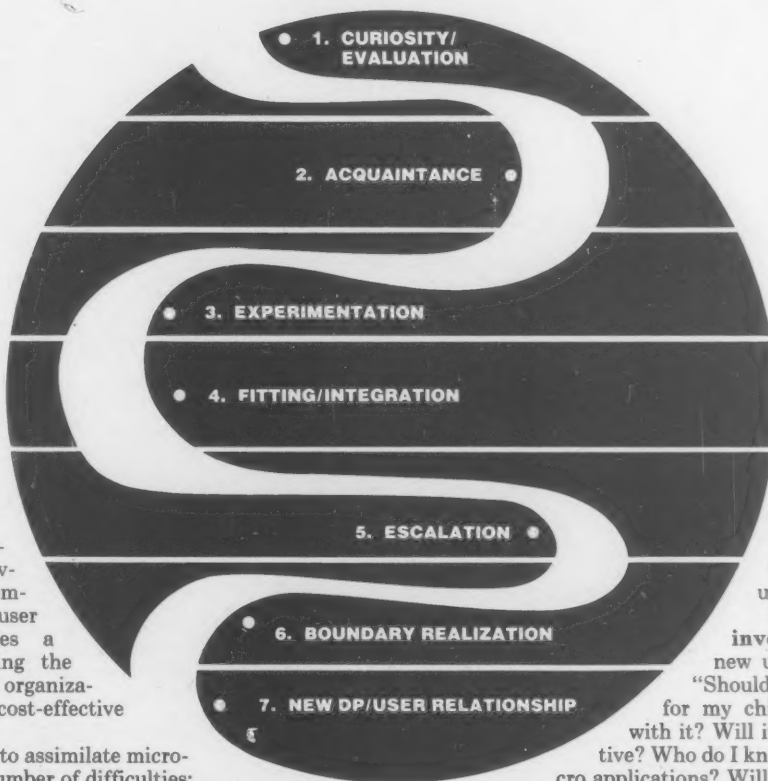
Managers who want to evaluate the potential productivity benefits of microcomputers need to understand how people learn about micros and incorporate them into their work.

One practical tool for analyzing this learning process is a "microcomputer user learning curve," a description of seven behavioral stages leading to computer literacy. The user learning curve provides a framework for addressing the problems that often stall organizations along the road to cost-effective microcomputer use.

As companies struggle to assimilate microcomputers, they face a number of difficulties:

- The DP division feels threatened. The fear is that micros are being used as toys; that users are developing unsound, unreliable software; that the corporate data base is unsafe; and that all micro applications will have to be approved before production use.
- Equipment and software go unused. Microcomputer hardware and software are not effectively used because of insufficient training, oversold expectations or inadequate communications with the corporate mainframe.
- Incompatibility spreads. Systems require functionally similar but different software, user training is redundant and applications are machine-specific.
- End users regard DP as the enemy — uncooperative, unresponsive to new ideas and quick to recommend studies whenever faced with unavoidable situations.
- Language barriers arise. Users need more training in order to be effective, software is being misused and applied to inappropriate applications and needs have outgrown capabilities.

Many of these problems and growing pains can be controlled and, in some cases, prevented, if management recognizes the user



learning curve and addresses users' needs at each stage. Following are the hallmarks of the seven stages for a typical individual: 1) curiosity and investigation, 2) acquaintance and language acquisition, 3) experimentation, 4) fitting and integration, 5) escalation, 6) boundary realization and 7) improved user/DP relations.

Stage 1: Curiosity and investigation. Typically, the new user asks many questions: "Should I buy a micro — for me, for my children? What would I do with it? Will it help me be more productive? Who do I know who is familiar with micro applications? Will it make me more effective on the job?" At this stage, the user is ambivalent about the prospect of becoming computer literate.

Stage 2: Acquaintance and language acquisition. By no means are we suggesting that a new user can acquire all the necessary language at this early stage. But for the user who is uncomfortable with the jargon and who may even in the past have avoided DP staff because he didn't know their language, some initial technical experience and understanding is required. What is a ROM, a RAM, a floppy disk or a mouse?

Often this jargon is acquired through careful observations of other users: children at home, professionals at work or sales demonstrations at computer stores. Usually at this stage, the new user begins reading about microcomputers, motivated by a set of questions regarding how much value this technology will add to their work or activities. The user tries playing a game, formatting a simple spreadsheet or word processing a short letter.

It is usually at this stage that the user becomes sensitized to the "feverishness" of this nascent business — the vast sources of assistance and information on the subject of personal computers. He also realizes that a set of complex choices face him regarding

IN DEPTH

IN DEPTH

software, hardware, training and support. Before going into stage three, the user performs an important task — usually a simple computer exercise that becomes a "validation" of the microcomputer's technological capability.

Stage 3: Experimentation. With just enough knowledge and language to make him confident, the new user begins to think seriously about investing resources in the technology. With some uncertainty

as to what possible applications might offer the most value-added first learning opportunity, the new user begins to seek out expert advice on software and hardware quality and availability of peripherals. While he basically understands the "nature of the beast" at this point, he is anxious and frustrated, because he is overloaded with product and sales information.

During this stage, the user begins to discriminate for himself among

the technological choices — he experiments with different hardware and software, perhaps using the same application as a standard for comparison. Or the new user has borrowed a micro or obtained access to one and experiments with a particular software package.

Inevitably, during this stage, the user becomes aware that learning to use this technology requires a major time commitment. In addition, he quickly realizes that a balance exists

between the costs of learning, acquiring and applying the technology and a return on new skills, productivity, knowledge or efficiency.

Stage 4: Fitting and integration. At this critical stage, the user makes a number of key decisions, based on his own analysis of the costs and benefits of becoming a microcomputer user. He becomes more discriminating in matching his skills, comfort level, application priorities and resources with available hardware and software. He carefully considers what added value this technology can have for his work, his position, his authority. On the down side, he weighs the costs of time invested in learning how to use the technology.

At this stage, he looks at the technology from the long-term perspective. Many of his questions are philosophical. Now that he suspects what investment and learning are required, he begins to consider seriously whether he really wants to change to accommodate the technology and to invest the time in learning how to organize, analyze and think differently. If, after weighing the costs and benefits associated with learning how to use the equipment, he decides to proceed, he then makes plans for the first important, relevant application, identifies the software and hardware he wants to purchase and, in many cases, makes one last attempt to solicit expert approval for his choice.

Stage 5: Escalation. This is the "hands-on-can't-get-away-from-it" stage. While the user shows concern over the amount of time required to develop a data base or an analytical routine or print a letter, he is somewhat cocky. The first application is successfully completed, with all the mistakes, crashes and desperate phone calls to more experienced "users."

Typically at this stage, the user can be seen flipping through pages of documentation in the user's manual. Upon completion of the first significant task, he is eager to find new applications — old problems to be solved through better records, more systematic analysis, more professional reports. The user becomes an advocate and seeks out others to join him. At this stage, users groups take on meaning — for sharing problems and stories of inexplicable computer behavior and for generating new ideas for applications, such as communications with other microcomputer users in the organization.

Stage 6: Boundary realization. After some time, the user begins to discover limits to using the microcomputer. These include software inflexibility, limited access to important data, lack of ability to program, time constraints and required restructuring of his work and leisure time. Without a support system of some kind, the user may become discouraged and skeptical, questioning the value of his new knowledge.

He has a number of choices

Documentation that speaks your language.

Clear, easy to use documentation. That's what you get with MCBA's packaged software. One manual with all the technical information needed to install, modify, and maintain the software. Another for day-to-day reference by the user.

Here's what satisfied users and resellers of MCBA's applications for the Wang VS have to say about our documentation:

"Each application is fully documented. And the User's Manuals are written in English, not 'computerese'!"

Juanne Snider, President, Citation Computing Systems, Inc., Southfield, MI

"Our biggest problem was that we had to train people who had a lot of resistance to the computer. I was very concerned about the documentation, but I found in using MCBA's documentation that the manuals for each package follow

the same format. That makes it much easier to use. So we have been successful in training our people."

Beth Schmeck, Training Manager, Elgin Machine Works, Elgin, IL

"MCBA's documentation is easy to use. The only requirement is that you be able to read! We use the MCBA manuals as a training tool."

Stephen Anderson, Vice President, Data Directions, Oakland, CA

"When I compare it to the documentation I've seen elsewhere, there is no comparison. If we run into a snag, we can pick up an MCBA User's Manual and find the answer in five or ten minutes. The system does what it says it will do, and to me, that's important."

Lowell Duzan, President, Carnegie International Corp., Indianapolis, IN

Wouldn't you like to save time and money getting your staff trained and your software installed? You can. With MCBA. Because our documentation speaks your language.

Mini-Computer Business Applications, Inc.
2441 Honolulu Avenue, Montrose, California 91020
Telephone: (213) 957-2900 Telex: 194188

MCBA®


☐ I'm listening.

Please send me free information for the MCBA applications I've checked below:

- Digital Equipment (PDP®-11 and VAX®—DIBOL®)**
- ☐ Accounting and Payroll
 - ☐ Manufacturing
 - ☐ Texas Instruments (DS990 and Bus. Sys.—COBOL):
 - ☐ Accounting and Payroll
 - ☐ Wang Laboratories (WANG VS—COBOL):
 - ☐ Accounting and Payroll
 - ☐ Hewlett-Packard (HP 3000—COBOL II with IMAGE):
 - ☐ Accounting and Payroll

Name _____
Title _____
Company _____
Address _____
City _____ State _____
Zip _____ Country _____
Phone (_____) _____ ☐ Call me immediately.
I am a ☐ Reseller; ☐ End User; ☐ Consultant;
Other _____

CW 53083



**"We use Graham's
Epoch 480 exclusively;
quality-related problems
are virtually zero."**

What data processing experts are looking for — at least those we talk to (and we survey them regularly) — is no headaches.

So some, like the one quoted above, use Graham Epoch 480 for everything, not just for important applications like archival storage and data transfer. Their position is, how can you put a price tag on peace of mind?

Epoch 480 delivers, because its binder system is as tough as they come. It minimizes head wear and tape debris and provides sharper signal output. It has earned Graham Magnetix the reputation around the world of being the tape company.

We do it by making good tape, and listening to the experts. Our customers.



**Talk to the
Media Management
Specialist at
Graham Magnetix
The tape company.**



GRAHAM MAGNETIX

Toll Free: 1-800-433 7632, 433 7633 In Texas: (817) 281 9450



IN DEPTH

for working out this situation. He may pass the "micro application" work to someone else, or he may seek advice on how to speed up the learning process. He may become a more critical evaluator of software at this stage and may set some definite parameters for what he will and will not use in the future. He may make plans at this stage for acquiring peripherals.

The user inevitably realizes, however, that in order to develop some long-range microcomputer applications project plans, he will need both technical assistance and additional resources to reduce the time he spends on new applications. He also acquires an appreciation for the value of coordination, group learning and facilitation of the entire process with expert assistance and support. In summary, realism and experience have replaced the naive exuberance of the earlier stages.

Stage 7: Improved user/DP relations. At this stage, the user appreciates the need for high-level language and technical expertise while becoming more confident of the value of his own business expertise in developing new applications. He yearns for the opportunity to speed up his learning process and expand his repertoire of applications.

The possibilities for electronic mail, interactive analysis, downloading from large data bases and graphics production become important and require coordination with a number of users and technical staff. He develops more sophisticated needs and is better able to communicate them.

Plans are developed to allocate resources and technical expertise for such applications. An education function is developed to support the development of microcomputer networks, and new applications are identified to support business plans and objectives. A corporate policy is developed to identify important productivity objectives, and the more sophisticated users provide support, education and advice to new users. Clearly articulated costs and benefits are identified regarding future microcomputer expansion and applications.

Applying the Curve

The microcomputer user learning curve reflects the

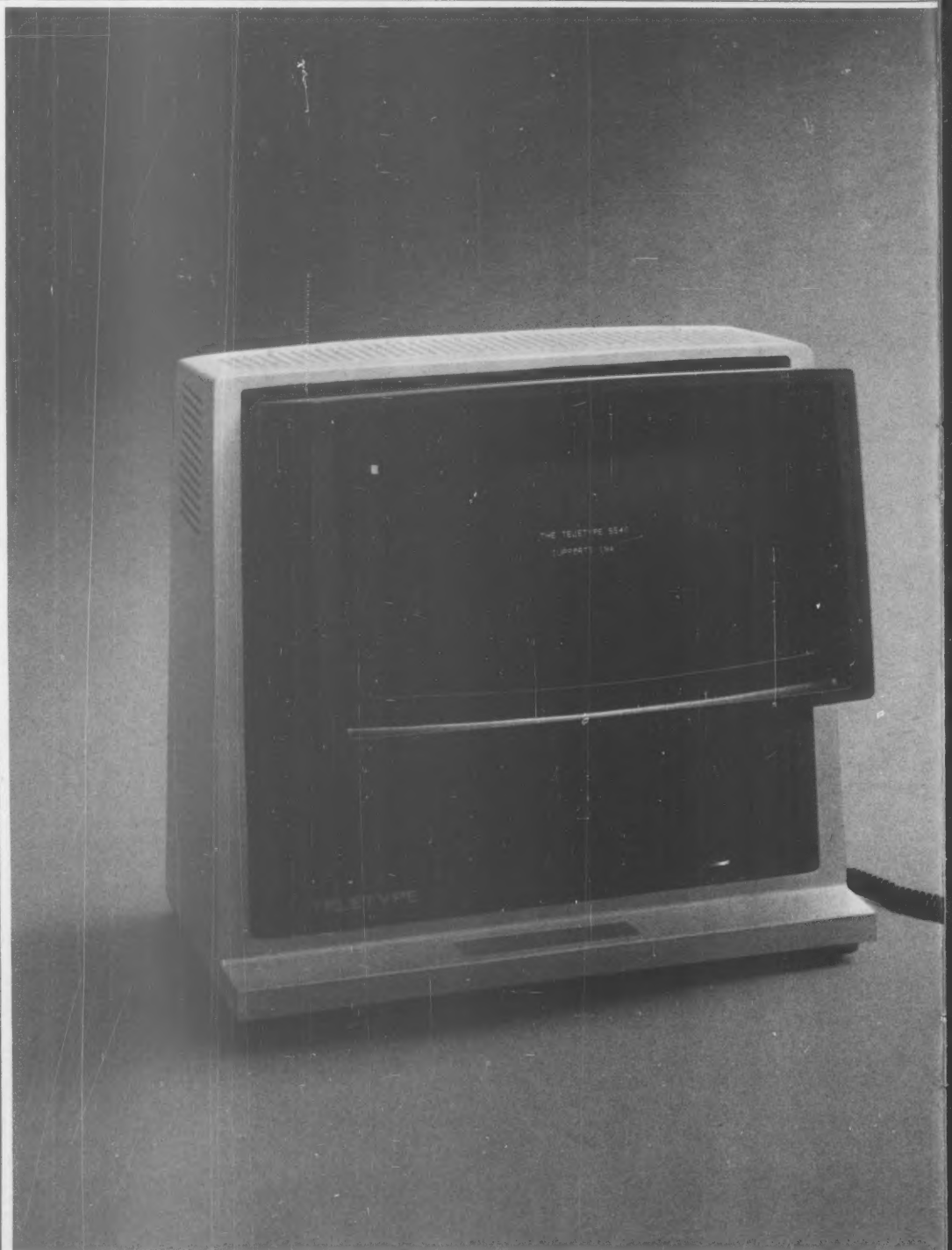
stages of development of a "typical" individual. A number of factors influence the success and rate of development through the stages: for example, whether the early stages occur at the user's own

initiative, in his home or at work; the degree and quality of training and technical assistance available during these early stages; and the learner's degree of motivation.

The following three examples illustrate the organizational and individual implications of the learning curve.

The first describes the marketing/selling strategy of the "neighborhood" mi-

crocomputer stores. The second discusses the efforts of a large DP organization to coordinate and plan the introduction of microcomputers. The final example presents the activities of an end-user



MICRO LEARNING CURVE

IN DEPTH

division for supporting users throughout the entire learning process.

Every successful micro-computer salesperson, whether he realizes it or not, understands the user learn-

ing curve. After all, selling is moving the customer through a decision process, educating him and convincing him that the quality of his work or leisure will be improved by the product. A

good salesperson is extremely effective in the early stages of the curve, but provides little meaningful support for the more sophisticated user.

The microcomputer sales

process is geared to attracting the curious user/prospect who wants to investigate the advantages of owning a microcomputer. One of the salesperson's first objectives is to help the user

become comfortable with the jargon of the product. Demonstration materials and advertising brochures are designed to minimize any association with the unfamiliar — the user is exposed to messages that convey how easy it is to learn.

In a relatively short time, the user is given a demonstration of the technology and encouraged to practice. He might acquire a false sense of confidence that in fact the learning process will be easy and short. The prospect is entertained with a "canned" demonstration, usually geared to his interests and first application need.

The salesperson must make a critical decision during this combination learning/selling experience. In order to achieve his goal of selling a new technology, the salesperson must be able to assess how much new information the user/prospect can handle — a very delicate and sophisticated art. A reasonable objective after the first or second visit is to push the user/prospect to that validation process in the second stage of the learning curve, whereby the user must satisfy himself that "good information in" means "good information out." At this stage or visit to the store, the prospect is offered a variety of reading material and demonstration packages, often on a loan basis. The salesperson is careful not to push the prospect too hard.

It is when the prospect reaches the third stage that the salesperson attempts to close the sale. The user has identified an important application, can discuss hardware options with some confidence and raises questions about what to do after the purchase. He has obtained information from co-workers regarding what plans may exist for providing microcomputers, and he understands their potential value in his work. With the sales staff's assurances regarding technical support, training classes and money-back guarantees, the user decides to buy.

Attention to the user's learning needs by the microcomputer salesperson often stops at stage three.

Large DP Organization

The experience of a large, service-oriented DP department provides a second illustration of the learning curve

THE TOTALLY COMPATIBLE TERMINAL. IT SUITS 3270 PROTOCOLS, AGREES WITH YOUR POCKETBOOK AND GETS ALONG WITH PEOPLE.

Introducing the 5540, our most value-packed 3270-compatible terminal yet. When Teletype Corporation unveiled its first 3270-compatible terminal some 10 years ago, people asked if we were committed to this business. And when we introduced our second terminal, the 4540, we still got asked the same question.

Well, quite frankly, there's no doubt about our commitment. The introduction of the 5540 offers more proof that we're in the 3270-business to stay.

But the best thing about the 5540 is that it represents an even better value than its predecessors. Because besides being competitively priced, the 5540 supports 3270 SNA/SDLC in addition to 3270 BSC line protocols. And there's full SNA character string support. It can also replace existing SNA terminals without host software modifications. And you can upgrade from BSC to SNA simply by changing diskettes.

We've also given the 5540 a more powerful microprocessor-based controller that will cluster up to 32 devices. Or you can choose a compact tabletop controller. You also get a choice of reduced size or standard displays, and 80 or 132 column data formats.

To improve operator productivity, the 5540 features a detachable keyboard with 3270-like layouts; 24 program function keys; a non-glare, high resolution tilt screen; plus a status line that includes a row and column counter.

Another nice thing about the 5540 is that it supports our existing 4540 displays and printer devices. Thus, you can mix and match existing and new terminals while holding down the cost of upgrading your system.

Backed by Teletype's experience in building over 200,000 3270-compatible terminals, the 5540 will certainly enhance our proven record for reliability. In the unlikely event of problems, self-diagnostics help pinpoint them. Modular design simplifies repairs. And with an established nationwide service organization, we're able to respond quickly when you need us. That includes delivering and installing terminals like the 5540.

Get to know our 5540 a little better. You'll find it's very easy to like.

TELETYPE: VALUE SETS US APART.



Teletype Corporation, 5555 Touhy Ave., Dept. 3223-F, Skokie, IL 60077. Tel. 1 800 323-1229. Extension 501. "Teletype" is a registered trademark and service mark of Teletype Corporation.

IN DEPTH

in action. The department director saw micros as a good opportunity for improving operations, reducing costs and increasing organizational productivity. He implemented a formal program to coordinate the introduction of micro technology. In many ways, this program recognized the various stages of the learning curve and supported the various levels of user maturity through specifically designed and well-coordinated procedures.

The curiosity stage was extremely significant to the overall success of the program, as at least two "micro shops" were organized and stocked with configurations from several microcomputer vendors. As an additional "carrot," a micro software library of packages suitable for preliminary investigation and exploration was made available in each of the shops. Users found these resources helpful in introducing microcomputing and were easily moti-

vated to move into the acquaintance stage of development.

The acquaintance stage, however, involved a significant effort on the part of the DP department. In order to allow users to learn the jargon and gain confidence, the organization developed rather sophisticated demonstrations and courses — activities that acquainted the users with generalized software such as Visicorp's Visicalc, as well as application-oriented systems such as a pension adminis-

tration system. In addition, a microcomputer newsletter was distributed quarterly, describing interesting happenings in the microcomputer industry.

The experimentation stage became the most resource-consuming component of the program, as the DP department began to implement specific applications that users could install and operate on their own local microcomputers (in many cases a machine borrowed from the micro shop). These applications were selected initially to establish business value to the organization; in addition, they were an efficient, cost-effective way to help users understand and appreciate the technology.

The fitting/integration stage of the user learning curve was supported through the establishment of codes of good practice designed specifically to help users assess the value of technology and to provide guidance and direction for independent (of DP) problem diagnosis and application development. The most significant code defined a micro application development process, a procedure for building applications in small, discrete phases. This procedure was oriented around prototyping and experimentation rather than the more traditional mainframe project life-cycle approach.

This particular code of good practice, as well as several others, was designed to support and maintain end-user self-sufficiency. While the DP department still had a very important role to play in the fitting/integration stage, the users were given enough help and guidance to be independent and productive.

The microcomputer introduction program described above was started approximately seven months ago and has been progressing quite well. The stages of the user learning curve beyond fitting/integration — namely escalation, boundary realization and improved user/DP relations — are currently being supported only in a very preliminary way. Progress in these stages will be assessed later.

End-User Division

In order to accommodate different managerial styles, the director of an end-user division in a large Midwestern manufacturing company has chosen his projects carefully and implements them on a small scale before "rolling them out" to other divisions across the country.

Typically, under his leadership, microcomputer projects begin in a research and development mode. For instance, in order to develop an improved sales-tracking system, he recently identified four sales staff members to pilot the development of a micro-mainframe network. The project will take place over a six-month period under closely supervised and monitored conditions. The users will meet monthly to discuss issues and problems and to work with DP staff to plan for mainframe data

The MEGA II has arrived!

The Gateway to the Future...

The MEGA II is the gateway to the future... providing the IBM user

- 3278 plug to plug compatibility
- Asynchronous/Synchronous Communications
- Standalone 64K CP/M business computer support

Application of E² PROM technology allows the MEGA II communications and terminal personalities to be dynamically updated to achieve unique user needs. The MEGA II display terminal may be configured in combination with existing IBM 3278 terminals. Contact Term-Tronics for more information on MEGA II. (619) 271-1770

MEGA II

The Truly Generic Terminal System

TTI
TERM-TRONICS
7408 Trade Street
San Diego, CA 92121
(619) 271-1770

base access and communications.

This director of end-user computing has incorporated the learning curve in all its stages throughout the pilot phase of the project. He hopes to reduce the risk of large-scale failure or users getting "stuck" at a middle stage. Users participating in this pilot will not be deprived of moving through the early stages of the user learning curve. Acquaintance, language acquisition, experimentation, fitting and integration will be supported throughout by the monthly education programs as well as through ongoing, one-on-one support provided by end-user staff.

At the end of the six-month pilot, the director will be in a position to launch a technology program for merging business strategy with microcomputers. He plans to assist more than 200 new users on the sales staff with this program. The problems that surface during the pilot will have been addressed and a plan for accessing the company's data base will have been cooperatively worked out with the DP staff.

The pilot may become part of the ongoing end-user educational program which the end-user division sponsors for senior management. Effective integration and fitting of the new "sales microcomputer" network into the overall corporate business plans will be achieved through presentations made by sales staff to senior management.

The new microcomputer sales program by then will have become part of the menu of technology applications that managers throughout the organization will be able to implement as they address long-range corporate business objectives.

This approach to stimulating user development and microcomputer applications in a large corporation requires careful planning, research and technical support. It incorporates a full appreciation for the time required to learn and the long-term consequences for achieving major productivity objectives.

Organizational Implications

Microcomputer implementation in any organization requires changes for both the DP staff and line man-

agement. Although the demand for productivity tools in today's management environment is high, effective processes for implementing the tools are in short supply.

The options open to an organization in addressing microcomputer demand are basically four:

1. Ignore the demand.
2. Allow existing rules and procedures regarding computer acquisition and applications development to guide micro implementations.

3. Develop a policy and procedures for assisting micro users in selecting hardware and software, in learning how to use selected software packages and in designing training programs.

4. Establish processes for integrating microcomputer implementation with critical business strategy and application.

The first two options are destined for failure because they do not take the user learning curve into account.

The third option is a rational, solid approach to introducing micros in organizations. It is put into practice through an information center/micro shops concept and in a variety of workshops and educational events. It focuses upon the early stages of user learning.

The third option is distinguished from the fourth, however, in that it is not proactive. In other words, DP staff members do not take an active role in seeking out new users or in

See the Biggest of Big-Name Exhibits!



yntopican XI

June 14-16, 1983 - Moscone Center
San Francisco, California

Visit a multi-million dollar display of office automation equipment - word processing systems - small business and personal computers - communications systems - facsimile equipment - copiers - dictation equipment - software - supplies - plus scores of other information processing products and services.

Here's just a sampling of industry leaders who will exhibit at Syntopican XI: American Bell - Apple - Burroughs - Compucorp - CPT - Data General - Datapoint - Dataproducts - Diablo - A.B. Dick - Dictaphone - DEC - Exxon - Honeywell - IBM - ITT - Lanier - NBI - NCR - NEC - Radio Shack - Raytheon - Royal - Sony - Syntrex - Univac - Wang - Xerox.

\$5

Present this coupon for 50% discount off exhibit-area admission price of \$10.00. Bring your associates - multiple discounts allowed. Simply make duplicates on copying machine.

\$5

Syntopican XI

Original National Office Automation/Word Processing
Conference & Exposition

Moscone Center - Howard Street between 3rd and 4th - San Francisco

Exhibit Hours:

June 14 & 15 - 10:00 A.M. to 6:00 P.M.
June 16 - 10:00 A.M. to 2:00 P.M.

Valid for exhibit area only. No one under 17 admitted.

For details on full conference participation, call

IWP at (215) 657-6300.

Microcomputers And Productivity

The authors will speak at a conference on microcomputers and organizational productivity to be held June 7-8 at the Boston Park Plaza Hotel. Keynote speakers include Peter Keen of Micro Mainframe, Inc., Larry Meador of Research and Planning, Inc., Ted Withington of Arthur D. Little, Inc. and Mitch Kapor of Lotus Development. More information is available from Micro Mainframe, Inc., 215 First St., Cambridge, Mass. 02142.

Sponsored by International Information/Word Processing Association, Willow Grove, Pa. Effective June 1, 1983, IWP will change its name to Association of Information Systems Professionals to more accurately reflect its expanding role in the information processing and office automation industry.

Exposition created and managed by Prestige Expositions, Inc., Ridgewood, N.J.

IN DEPTH

differentiating computer skills among their users. Without this clear assessment of the "user pool," it is unlikely that the DP staff will be able to manage microcomputer implementation as an ongoing process. The consequences or risks, in this instance, are the following:

1. Initial enthusiasm for microcomputer applications, followed by disappointment, lack of use or frustration.
2. Sporadic and isolated imple-

mentation efforts throughout the organization.

3. A prevailing perception among users that DP wants to control the acquisition process — to restrict applications and learning rather than support it.
4. Mismatch of user expectations with technical support.
5. Attempts to go around DP to purchase, implement and train functional users.
6. Missed opportunities; the po-

tential productivity gains do not materialize.

Emphasis on Integration

The fourth approach fully recognizes the stages of the learning process in that the organization takes active steps to support users in all stages. In particular, the critical stage of fitting/integration is heavily supported and education programs emphasizing the business application of micros are established. Management

consultants are sometimes provided. The entire program is a collaborative effort — DP with users.

In organizations that have encouraged microcomputer use, the effects may not be apparent for up to five years or more. Users often tend to "fall off" the curve, according to reports from some companies. Managers unfamiliar with the microcomputer technology are asking serious questions about the value added by such technology. Some feel the learning requirements so far outweigh any benefits that they will leave the technology to the "Pepsi generation" of micro users.

Because many DP staff members themselves are not familiar with micros, they do not understand the learning requirements for managers. In a recent poll by Louis Harris and Associates for *Business Week*, 85% of the middle managers responding reported that computer-generated data is essential to their jobs and 91% stated that computer access increases their own productivity. However, of those polled, only 55% had taken any formal computer training on their own or through their company.

Learning must be regarded as the adaptation of the individual to a changing environment. The recognition and support of a microcomputer user learning curve should result in better quality applications, a meaningful integration of microcomputers into work structures, a modification of work structures and a smoother transition into a computerized organization.

About the Authors

Thomas J. Gambino is executive vice-president of Micro Mainframe, Inc. in Cambridge, Mass. He concentrates on the design and implementation of decision support systems.

Thomas W. Johnson is vice-president of Research & Planning, Inc. in Cambridge. He has been involved in the design, development and use of decision support systems for the past 10 years.

Diane D. Wilson is a doctoral student at Harvard University, specializing in the design and evaluation of processes by which organizations assimilate new information technologies.

TIME-PROVEN PERFORMANCE



While new printers with impressive specifications are introduced on an almost daily basis, only time will tell the true quality of the product. Over the past 2 years our customers have continued to buy the DS180 printer, not only because of its impressive performance and competitive price, but also because of our outstanding track record for product reliability and customer support.

We have continually improved on the performance of the DS180 by incorporating such enhancements as dot addressable graphics, 6 user-selectable print sizes and a 2000 character buffer. These features coupled with 180 cps printing, parallel and serial interfaces, adjustable tractor feed and over 40 other programmable features, make the DS180 one of the most versatile matrix printers available today.

Before you select your next printer, why not take a look at a time-proven performer—the Datasouth DS180.

The DS180 printer is available nationwide through our network of sales/service distributors.

datasouth computer corporation
P.O. Box 240947 • Charlotte, NC 28224 • 704/523-8500

Abuser Friendly Report Processor For IBM/38?

Managerial support software that is truly easy to use.

Call or write for more details on FUSION 4/38.

FUSION
PRODUCTS INTERNATIONAL

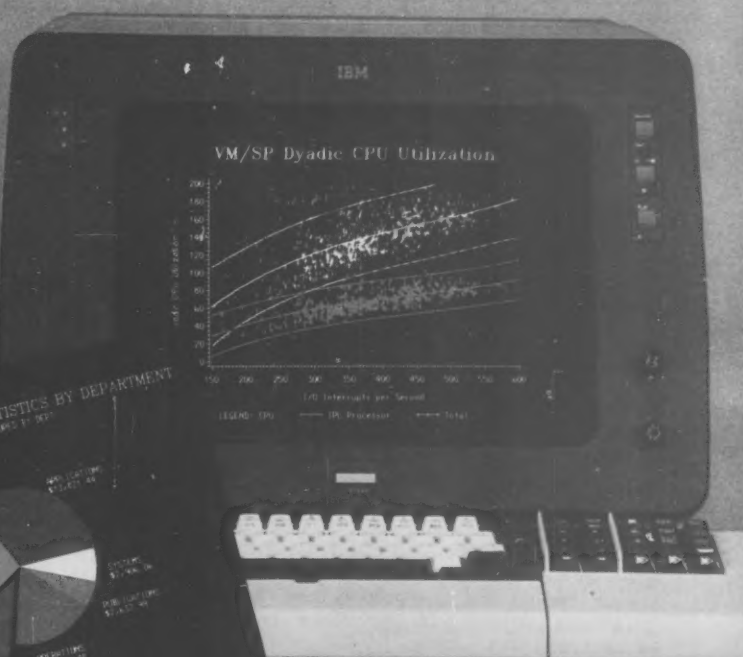
(415) 381-1340
PO Box Fusion
Mill Valley, CA 94042
Telex 178099 FUSION

SAS....

Performance Tools for Every IBM 370 Operating Environment

RESOURCE USAGE BY PROGRAM AND JOB
ANALYSIS OF VSE/POWER ACCOUNT DATA

PROGRAM	JOB NAME	NUMBER OF EXECUTIONS	CPU TIME IN SECONDS		I/O COUNT	
			SUM	MEAN	SUM	MEAN
DSERV	DSERV	1	2.88	2.88	311	311
	RESTORY3	1	0.72	0.72	1499	1499
DTSMALS	ICFCIC5	9	110.44	12.27	34596	3844
DTSMIT	ICFCIC5	4	364.80	91.20	52773	13193
DTSMIL	ZAPTORV5	9	4.49	0.50	3227	359
LNKEDT	LETSBTR	3	4.15	1.38	1479	493
	LINKDSR	2	0.88	0.44	708	354
	LINKBRA	1	2.30	2.30	650	650
	LINKMTR	6	10.76	1.79	7072	1179
OBJMAINT	DRZAPS	1	0.36	0.36	403	403
PDZAP	DRZAP	1	0.60	0.60	674	674
PLIOPT	BRANKS	1	5.16	5.16	4157	4157
	MATRIX10	5	52.92	10.58	40614	8123
POWERJA	POWER/V5	4	226.12	56.53		
RESTORE	RESTORY3	1	2.38			
	SASLOAD	1	0.28			
RSERV	LETSBTR	4	6.23			
	LINKBRA	1	4.33			
SASPRE	ADCTEST1	3	20.33			
	ADCTEST2	8	81.44			
	ADCTEST3	1	13.81			
	ADCTEST4	4	73.50			



SAS®—always a leading performance measurement tool for IBM OS users—now offers VM/CMS, DOS/VSE and SSX users the power and flexibility of the SAS System.

You get a twofold advantage with the SAS System. A library of ready-to-use procedures gives you the power to analyze performance statistics without formal training. SAS programs for reducing VM Monitor data and VSE Power accounting data are included with each installation tape. You can use these SAS programs to produce summary reports of key performance variables, user resources and system work loads. To print the reports, you can take advantage of the color charting, plotting and mapping capabilities in SAS/GRAPH™ or use the line printer reporting facilities in SAS.

In addition to routine performance and accounting reports, the SAS System provides extensive data management and retrieval tools, combined with a sophisticated macro facility, to handle all your capacity planning needs. You can use SAS to analyze performance data from several operating environments, creating an integrated system.

Now you can enjoy the power and flexibility of the SAS System—under OS, VM/CMS, DOS/VSE and SSX.

Call or write today. SAS Institute Inc., SAS Circle, Box 8000, Cary, NC 27511 USA. Telephone (919) 467-8000. Telex 802505.

The SAS System is available outside the USA from the Institute's subsidiaries in Heidelberg, West Germany; Weybridge, Surrey, UK; Wellington, New Zealand; and Sydney, Australia and from licensed distributors in Tokyo, Japan; Milano, Italy; Herzliya, Israel; and Singapore.



EDITORIAL

Putting an End to Big Brother

We hear a lot these days about Big Brother and the coming of 1984. The specter of our society becoming enslaved through high technology and constant surveillance is as overstated today as it was 40 years ago when George Orwell wrote his bleak portrait of a negative utopia. However, this opinion is becoming increasingly difficult to maintain in the face of recent Reagan administration and congressional actions.

It is bad enough that Congress is rushing willy-nilly toward establishment of a workers' ID system in the name of immigration reform, a system that promises to be a national ID card backed by hundreds of millions of dollars worth of record-keeping computers. What is worse is the recent creation by the Federal Bureau of Investigation of an electronic surveillance system in its National Crime Information Center [CW, May 23].

In the name of protecting the President and other high-level U.S. officials, the FBI will administer an electronic file to help the Secret Service track the whereabouts and activities of those it has judged possibly dangerous. The bureau has taken this step, which carries the chilling precedent of turning its record-exchange NCIC system into a surveillance system, despite the fact that the Secret Service claims the system will be only marginally helpful in its protective task and despite the concerns of a congressional oversight panel.

The House Judiciary Subcommittee on Civil and Constitutional Rights declared this system use illegal and asked the FBI to cooperate in developing statutory guidelines which, despite that finding, would actually have allowed the system to proceed — although with heightened congressional scrutiny. The FBI, which at least in public makes a great show of abiding by congressional oversight, thumbed its nose at the subcommittee and put the system on-line.

By refusing to be bound by any direction from the congressional panel charged with overseeing its activities, the bureau has become, in effect, a rogue agency. Congress should immediately act to stop the Secret Service system. Failing that, it should at least institute statutory guidelines restricting its operations and preventing its expansion.

Unfortunately, the likelihood of Congress shouldering its responsibilities in this area is slim indeed. When the matter came up before the full Judiciary Committee, its members spurned the advice of the subcommittee, which is charged with handling these matters, and gave the new system the committee's blessing.

When Congress gives in to this kind of thinking, throws up its hands and refuses to exercise its oversight function, it is scary indeed.

We would like to put an end to all this talk about Big Brother and the threat of high technology. A lot of this noise is coming from Capitol Hill, where politicians of all stripes are making political hay from this topic. Their time could better be spent cleaning their own house.

DATA PAST

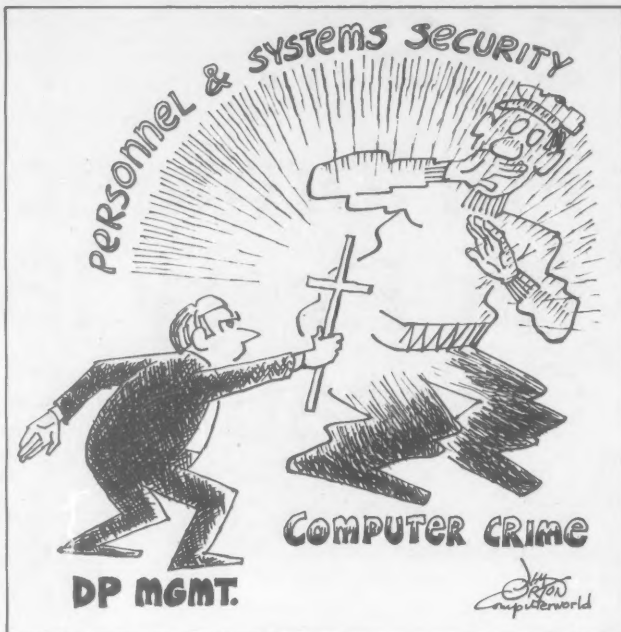
Five Years Ago May 29, 1978

ANAHEIM, Calif. — The 1978 National Computer Conference was set to open here for a period of four days.

The conference was expected to attract a record-setting audience of more than 40,000.

Ten Years Ago May 30, 1973

TULSA, Okla. — Action on the IBM counterclaim to Telex Computer Products, Inc.'s \$1.2 billion antitrust suit continued here with Telex rebutting charges that it hired IBM engineers to steal trade-secret information from the firm.



The Exorcist

LETTERS

Security and the NSA

"Radio Waves From Your System Giving Away Your Secrets?" [CW, May 9] was a fair presentation of opposing views on the relative importance to data security of the potential for illicit intercept of information-bearing emanations. Nevertheless, some further elaboration might be helpful.

First, I believe there to be no significant disagreement as to the technical feasibility of intercepting emanations from certain serial-by-bit devices, including some CRT terminals and a particular low-speed printing mechanism, when the distance between the intruder's antenna and the source is quite small.

If there is a potential for loss of data in this manner, and that possibility is very small, physical control over a reasonable radius so as to prevent the installation and use of a nontrivial amount of hardware by the intruder will usually contain the problem.

It is wholly appropriate that the National Security Administration (NSA) be concerned about the potential for the loss of information through emanation intercept. However, its tendency to overstate grossly the potential for security problems of all kinds seriously impairs its credibility and discourages those who might otherwise be willing to cooperate with the agency.

The agency's lack of concern for accuracy in describing potential problems actually works against its professed goal of achieving greater security in computer-based systems. An example is its insistence that information can be extracted from the emanations of large-scale mainframes and immediately attached peripherals.

The NSA would find the major vendors far more willing to consider

very expensive design changes to reduce emanation levels from central system components if just once it would demonstrate the capability for acquiring information in this manner.

I readily agree that the NSA should not demonstrate how it does it, if it can, but I see no reason why it should not be willing to have an impartial group operate, for example, a reasonably full IBM 3033 configuration while the agency, with as many trucks full of gear as it may want parked outside and totally obvious, intercepts emanations, processes them and brings the resulting yield in for comparison with the data processed in the system.

If the NSA will conduct this modest demonstration, many doubters, including this writer, will surely be converted to its cause and join those urging the vendors of hardware to show greater concern for eavesdropping on its hardware.

While we continue to wait for this demonstration, which I have proposed to the NSA several times over the past dozen or more years, I urge people that rather than sitting around worrying about interception of information-bearing emanations, remember the years of urging by the intelligence community that we burn magnetic tape and physically destroy disks on which classified data had been recorded — "because once something has been recorded on magnetic media it can never be fully erased."

Former President Richard Nixon's 18½ minutes of unreadable tape seriously eroded that myth. Now it is time that we reduce this successor myth to its proper size.

Let's have the demonstration.

Robert H. Courtney Jr.
President

Robert Courtney, Inc.
Port Ewen, N.J.

LECHT ON SCIENCE/Charles P. Lecht

U.S. vs. IBM: A Microcosm of a Legal Mess

The juxtaposition of certain current and past events can lead us to an increased appreciation of the kind and magnitude of mess into which lawyers without suitable technical qualifications can plunge DP manufacturers and users and governmental agencies in this electronic age.

Most such practitioners of law seem inclined to think that preelectronic precedents have clear and inevitable application to present, technically determined issues of contention, and that even the most fundamental basis for a lawsuit — namely, the object under dispute — is of relative unimportance and need have very little bearing on the outcome.

Cynicism of this sort, routinely exhibited by certain members of our legal community, is so totally out of sync with the facts that I fear the progress we all believe possible through our technology is being subverted or impeded by increasing litigation

This is the second part of a two-part series on DP lawyers.

over the very fact of its happening.

That our government dropped its lawsuit against IBM after 13 years of intensive preparations provides us with an example of lawyers run amok on a scale without precedent in our business.

Can you imagine how intense the "buck stops here" pressures on our Justice Department chief must have been in order for him to have allowed his staff to initiate litigation aimed at righting the alleged wrongs of the most powerful science company the world has ever known? Is it not astounding that our Justice Department, woefully short of Nobel laureate scientists and astute businessmen, saddled with antiquated internal technological support and circumscribed in its scope of opera-

tions by having to live its life in a political fishbowl, should have reached the conclusion that it had a real chance of proving its point in so unequal a battle?

Up against a force of such power and influence that most of the world's computing depended (and continues to depend) on it; a force capable of sustaining \$4 billion dollars' growth a year while consistently realizing over 20% profit; a force rated No. 1 among all U.S. corporations for expansion from within (as opposed to by means of acquisition); a force with access to such analytical power that it decided to withdraw from doing business in Iran long before the U.S. government had the least inkling of what was up; I am led to wonder about the facts out of which our government was able to summon up a belief that it could win in such a confrontation.

In view of the case's conclusion, the bottom line of its actions could

only charitably be thought of as an intelligent error.

Constrained by the exaltation of his throne, upon whose dignity he is so nobly impaled, it is hard to imagine the typical Justice Department chief acting on anything, except through the advice and counsel of his subordinates. They, in turn, must proceed in similar fashion, down through the hierarchy until that metamorphosing organizational layer is at last reached where mere data is translated into human response.

In regulatory watchdog entities, that particular layer might accurately be styled the lowest "lawyer layer." It gives one pause: Who actually concluded that it was both fitting and intelligent to attack the formidable power of IBM — at once wrapped in a cocoon of computer technology and generating that same technology as its principal end product? IBM represented an order of probative antitrust activity never before addressed by the Justice Department monolith, in terms of the defendant's private sector wealth and natural and artificial intelligence resources.

'Dungeons-And-Dragons Sequence'

In my mind's eye, this evokes the image of a duel between two mythical creatures in a dungeons-and-dragons sequence. One is equipped with the armor and shield of a 15th century knight (our trusty institutional champion of justice); the other is a 21st century nuclear-powered artificial strength and intelligence engine.

Spurred on by the inflammatory and highly vocal misconceptions of his advisers, our knight, his gorge ever rising, himself initiates the battle. He is at once engulfed by an electronic net that deploys a set of holographic decoys, whose effect is to keep him embroiled in an arid, 13-year-long quest for something real at which to strike.

Sustained in his battle against the illusions and projections of his enemy — and it must be his enemy, his attorneys tell him so — by taxpayer/serf dollars, our champion clanks and creaks his way home at last, having long since forgotten what precisely he was doing or why he left in the first place. He removes his mailed glove, shakes hands with him who had been called his adversary and sinks into a sleep not unlike coma.

I have reason to believe that the cost to IBM of defending itself against antitrust lawsuits must have been between \$15 and \$20 million dollars per year during the period when it was under attack by the Justice Department. While perhaps a third of this was spent on the Justice Department assault alone, it is hard to separate out the costs of additional antitrust actions against IBM that arose as a result of its presumed weakened posture in the face of the original Justice Department suit.

Great time to sue! As only God knows the sums of money and time spent by the group of companies suing IBM for anticompetitive reasons

(Continued on Page 46)

HUMAN CONNECTION/Jack Stone

Successful Marketing of Micros Demands Effective Training, Support Programs

Time magazine, in its May 16, 1983 issue, reported on several daring programs of literacy training for executives of some large corporations that emphasized hands-on exercises at the consoles of personal computers.

The results? Taking an optimistic view, about a fifth of the attendees continued using the machines at their desks. But on the pessimistic side, around 80% ignored the computers after the class ended.

I don't know how you read it, but I'll wager dollars to doughnuts that many within the latter group of executives have been turned off from the subject of computers for years to come. And I'll further bet that one of the major problems with the program was not its content as much as the lack of follow-up systems support with the executives to make sure they were applying the micros correctly.

A postmortem of the program would probably be useful at some point in the future, but for the time being, I only want to proffer some general advice about the planning for such executive training. It is presented here not as a revelation, but as a timely restatement of one of the axioms of our business: Effective training of executives depends upon a carefully crafted plan for development, implementation and follow-up — worked out between the executives and the instructional/computer staff — to meet a validated set of user needs.

It is of little importance what class of machine we're talking about, a \$1 million mainframe or a \$100 home brew, the axiom is valid. And if the truth be known, the axiom applies to any level of new user.

One indicator of how closely suppliers of computer services are fol-

lowing this axiom is a sampling of the support philosophies currently embraced in the computer retailing business. Now that the annual revenues from personal computers have exceeded those of the minis and are breathing down the tail pipe of mainframe revenues, marketing practices within this segment of the industry augur for the future, for good or for evil.

A Personal Visit

Take, for example, the Computer Center at the Famous-Barr department store in St. Louis. When I visited there a few weeks ago, I found a class operation that markets a half dozen of the most popular personal computer systems. One of its spokesmen stated that the staff prides itself on the center's education and follow-up support program. He estimated that within about four months after machine acquisition, nearly 80% of the center's clients are self-sufficient.

Furthermore, he stated that the center dropped the merchandising of the small home computers (for example, the Atari Corp. 400) for several reasons. First of all, almost the same amount of time and effort was required to sell, train for and support a small machine as was required for an IBM Personal Computer at twenty times the price. Second of all, the center was not receiving the type of support it needed from the vendors of the small home computers.

As a case in point, the center staff was particularly aggravated by the delinquencies on the part of the suppliers in returning promotional rebates to buyers.irate customers were coming to the center to vent their spleen, even though the center was not involved in the rebate process.

Having been encouraged about

how one major retailer is addressing user support — albeit at the level of the business-oriented personal computer — I thought it useful to check out what independent vendors of the homespun machines were doing for their users.

I knew it was going to be a long day after I checked the St. Louis Yellow Pages. There was not a single entry under "computers" for the Texas, Instrument, Inc. or Atari brands, and the Commodore Business Machines, Inc. entry asked the reader to check the vendor's ad under "cash registers." So I contacted the local hobbyist underground and was advised: "Hey, man, it's the Children's Palace. Far out!"

It was far out, all right, about an hour from Gateway Arch. The Children's Palace was a huge toy supermarket, but its management had obviously recognized the value of the computer: The home machines were located only a hop, skip and a jump away from the cash register — just beyond the inflated balloons, the wooden play-blocks packages and the pinwheel displays.

Although no one was around, I began my systems testing anyway, but couldn't get too far because the displays were not hooked up.

The store manager stated during my interview that the policy at Children's Palace was full user support. There was a wall-to-ceiling library of prepackaged game cartridges, which did not need documentation. There was also a barely legible list of Basic courses available from an independent trainer crosstown — "if you really want to learn the whole programming to-do, but I wouldn't advise it," the manager said.

I had to stop and ask myself: Is this where the industry is heading?

Justice and the World's Computer Giant

(Continued from Page 45)
during the Justice Department action, so I suspect that only He knows whether the outcome of these suits might not have been different had IBM not been forced to assume an angelic image during the 13-year period.

In each case, no matter what its merits, swift resolution must have seemed preferable to victory if the impact of winning might reveal

IBM as a truly operational cyborg at war with a company less than, say, 5% its size, as it claimed the Justice Department's charges to be false.

Now, I'm not saying there wasn't merit in any of these suits against IBM, that IBM itself could not have inspired some or that the event of each was necessarily wanted by any party involved.

What I am saying is that the Justice Department's de-

termination that its own case was without merit represents conclusive evidence in at least one instance that IBM was being wrongly sued and that we shouldn't be too surprised if at least one other suit had little chance of winning except against IBM under Justice Department pressure. That it was compelled to fight over 10 antitrust suits during the Justice Department action certainly

gives us reason to suspect that some of them were inspired by lawyers up to no good.

And it would be difficult indeed to avoid reaching the conclusion that legal ineptitude was at the root of the entire fiasco. A mistake is a mistake; a lawyer-driven mistake of this magnitude, however, is an event with which the long-suffering English language has yet to

catch up.

It was surely the lawyers who advised their client, namely, our government, to sue, and thus to cause untold sums of money to be spent (and I mean literally untold, since neither IBM nor the Justice Department has ever officially acknowledged the exact size of the bills involved).

And it was surely they who caused the years to be frittered away for reasons none of us seem to remember. The lawyers who caused this gargantuan mess lost nothing themselves and were never cited for irresponsibility or ineptitude. On the contrary, the legal establishment sought to leave the impression that something worthwhile had been achieved by this suit against our industry flagship, and that somehow, some good came of it.

Having bought this dubious fiction for a fact, we were given the perfectly natural follow-up explanation that "no further good" could be achieved by continuing to prosecute and that therefore the case should be dropped. I, for one, would like to know precisely what good was accomplished by this epic shoveling of time, energy and money into the bottomless mew of legal incompetence and, possibly, greed. Can anybody distill the principle upheld, in any number of words?

Even dead fish float in a churning sea, we are told, and if anything confirms this, it is the number of otherwise incompetent lawyers bobbing on the surface of our field.

Lecht is president of Lecht Sciences, Inc., a New York-based think tank specializing in computer and communications technologies.

How Many Programmers Does It Take To Write A Report?



NONE!

Not if you're running NOMAD2™ on your in-house machine. End-user self-sufficiency is what we're talking about and we'll give you the capability to deliver. That's what the

NOMAD2 INFORMATION CENTER is all about. The NOMAD2 INFORMATION CENTER consists of: NOMAD2, the most powerful 4th generation language/DBMS currently available; support staff training, product education, documentation and product support; and of greatest value, our 16 years of experience in delivering end-user computing.

NOMAD2 is widely recognized in the industry as the premier end-user oriented software product. Its report writer is unsurpassed and its graphic capabilities, relational properties and broad spectrum of built-in functions allow it to fully respond to end-user needs, no matter what those needs are. The in-depth training and support materials are exactly those used to support our NOMAD2 timesharing based business.

Whether you're currently running an information center, or just thinking about setting one up, examine the options available to you and then talk to us. And the next time

someone asks you, "How many programmers does it take to write a report?" tell them you're delivering NOMAD2 through your information center. If they know anything about delivering true end-user computing, they'll know what you mean.

For further information call Charles Graham at (203) 762-2511, or write to:

N2IC, National CSS,
187 Danbury Road,
Wilton, CT 06897

NOMAD2 Information Center

is
Experience the difference
A

National CSS

DB a company of
The Dun & Bradstreet Corporation

End The Burden Of Programming Documentation **DOKTOR™**

Automatic Cobol Program Documentation Generator

- Reduce software maintenance Costs
- Reduce new development Costs
- Ease burden of Conversions
- Standardize documentation
- Author leaves — Doktor stays
- Seven comprehensive Reports
- Completely automatic

For All IBM, OS, DOS,
HP3000, HW-DPS6

CPS

3701 Shoreline Drive
Wayzata, MN 55391
(612) 471-8448

End-User Computing Facility Aids Insurer

NEW YORK — Although a life insurance company here welcomed the advent of on-line decision support systems, its management was wary of placing end users in a potentially unstructured environment.

Lee P. Mulvihill, assistant vice-president of The Equitable Life Assurance Society of the U.S. here, said, "We were fortunate in recognizing the absolute necessity of providing a facility to guide the user smoothly, with a minimal need to learn technology. We call this facility the 'Manager's Workbench.'"

When Equitable first began experimenting in the realm of the information center and end-user computing, the prospect of building a manager's

"The [Workbench] software is deliberately very tolerant and forgiving. It expects mistakes and second thoughts and engages in a dialogue which encourages the end user to relax and use the computer without intimidation."

workbench facility was discussed. "At the time we called it 'the harness,'" Mulvihill explained, describing it as a common front end to all end-user computing by means of a standard set of display screens at the terminal. Software Corp. of America (SCA) was contracted to develop this facility. During

1980 and 1981, this firm had developed a set of programmer aids for Equitable called the (IBM) VM programmer's workbench. "This along with SCA's extensive knowledge of [IBM] CMS led us to choose them for the development of the Manager's Workbench," he noted.

According to Mulvihill, "the product of this joint development has been used in virtually every decision support computing application here in the securities operations area of Equitable." The Manager's Workbench enables users to catalog and access standard reports simply and directly. The end user does not need to know the query language, and the intricacies of the operating system and the communications link to the

(Continued on Page 52)

'JCLcheck' Update Tests JCL Codes

SAN JOSE, Calif. — Triangle Software Co. has announced Release 4.0 of JCLcheck, a utility for IBM OS/VS and VM/CMS operating systems, which is said to add the ability to test JCL condition codes for validation, as well as to report on how efficiently data sets are utilizing disk space.

JCLcheck detects and diagnoses all JCL errors in a job stream before submission for test or production runs, a spokesman said. The release tests the validity of condition code JCL by simulating the execution or skipping of steps according to the condition codes specified on the JOB or EXEC statement.

JCLcheck also reports on how efficiently data sets use disk space. Whenever a current data set is referenced by a job, the utility identifies wasted disk space by reporting how much disk space the data set uses and how much it actually occupies.

The release also expands JCLcheck's checking of control statements to IBM's Idcams utility and includes interfaces to University Computing Co.'s UCC-ONE, Pansophic Systems, Inc.'s Panexec and Applied Data Research, Inc.'s Librarian.

The package is priced at \$15,500 from Triangle Software, located at Suite 108, 4340 Stevens Creek Blvd., San Jose, Calif. 95129.

'Quick-Fetch' Said to Relieve IBM MVS Storage Constraints

PITTSBURGH, Pa. — Duquesne Systems, Inc. has announced a product said to improve the response time and relieve memory storage constraints of IBM MVS operating systems.

Called Quick-Fetch, the product optimizes the part of the operating system which services requests to locate and load programs from direct-access storage devices into virtual storage, the vendor said.

The Quick-Fetch package is reportedly designed to seek and identify the most actively fetched program modules and load them into a managed area of virtual storage in the Quick-Fetch address space. Future fetch requests for those modules are then directed to this managed area and are filled by a storage-to-storage transfer process.

The package relieves virtual storage constraints by increasing the system's available common storage area without causing system degradation, the spokesman pointed out. Link pack area modules — which are characterized with low or moderate activity — can be transferred from the link pack area to a link list library. Once there, the information can be reportedly be managed by Quick-Fetch.

The package costs \$9,000. However, the firm is presently offering the software at an introductory price of \$6,000. This pro-

gram is in effect until July 31.

DSI is headquartered at Two Allegheny Center, Pittsburgh, Pa. 15212.

Astco Enhances 'Astute' Utility

PALO ALTO, Calif. — Astco has announced Release 2.0 of its Astute catalog, direct-access storage device and data set processing utility and productivity aid.

Astute can be run from TSO, structured programming facility, batch and an operator console and will run in any IBM OS environment. Data set and catalog management enhancements are said to include index Vtoc support, data set compress and release operations, improved preprocessing and selection and a catalog copy facility.

Astute reportedly can perform a number of actions with one pass over a user-specified pattern of Vtocs. The actions can be based on the most complete user-specified selection facility available, including data set and volume name patterning.

Available free for a 45-day trial period, the software costs \$7,000 for the first CPU from 926 Amarillo Ave., Palo Alto, Calif. 94301.

IF YOU'RE CONSIDERING JOB ACCOUNTING AND CHARGEBACK PRODUCTS...

... you must be concerned about controlling DP costs — and about getting the most from the resources you have. (Maybe you've even been getting pressure from Financial to "find a way to hold down costs!")

You need KOMAND, the DP Chargeback System! With KOMAND on your VSI or MVS system, you can:

- Collect all the true costs of any job or job step (including transaction charges for online applications, direct access space storage charges, costs of dedicated and communications equipment, and personnel costs for system design and programming services).
- Identify all costs by the user.
- Get the facts in a report, in minutes.
- Chargeback or allocate the costs to the user.
- Influence resource usage through economic incentives.
- Determine the real, accurate costs of using DP resources.
- Justify hardware needs through accurate utilization statistics.

Datapro had this to say about KOMAND: "If you are in the market for an efficient and flexible job accounting system for your OS or OS/VS system, you should take the time to evaluate KOMAND... after all, these users judged it good enough to be placed in the highest cluster category for overall satisfaction."

In its 14 years of business, PACE has installed KOMAND in leading banks, corporations, governments and institutions worldwide. Some start with KOMAND/BASIC, which provides an inexpensive, fundamental job accounting package (with credit toward the larger KOMAND system as needs grow).

Over 40% of our users had outgrown the limits of a competitor's job accounting package. Shouldn't you consider the best, right from the start? Call today for information and a free job accounting evaluator.

PACE APPLIED TECHNOLOGY, INC.
7900 Sudley Road, Manassas, VA 22110
CALL TODAY! 703-369-3200

KOMAND

Name _____ City _____
Title _____ State _____
Company _____ Zip _____ Phone _____
Address _____ Operating System _____

ATTACH YOUR CARD HERE

PERIPHERAL SYSTEMS
SOFTWARE & PERIPHERALS
RAINBOW TO VAX

You already know GMS as your leading digital systems supplier. Now you probably don't know our new products including data & data systems, data in memory, and options by Kennedy National Semiconductor, Princeton and Randa.

111 E. Savanah Way, Carson, CA 90746

(213) 217-0161

gms

See us at the Summer Conference at the Harbour Castle Hilton May 12-15 - Booth #608

Both Batch, On-Line Versions

IBM-Compatible Analyzer Boosted

NORWALK, Conn. — Release 6.1 of both the batch and on-line versions of TSI International's Data Analyzer and Audit Analyzer for IBM and plug-compatible mainframes running under OS and DOS has been announced.

The Data Analyzer is an information retrieval analysis and presentation system. The Audit Analyzer is an

electronic data processing audit system.

The current release for both packages is said to contain enhancements to the automatic library function, the CICS and IMS/DC on-line features. The library function will now reportedly provide users with new facilities for dealing with alphabetic character manipulations, substitution and

conversion to numeric data.

The IBM IMS/DC on-line system for both packages has reportedly been enhanced to operate in a VS1 environment and uses two alternate indexes within its data base. The request submittal screen has been adapted to assist non-technicians with JCL options, the vendor said.

The Standard system of the data analyzer sells for \$22,000 under DOS and \$26,000 under OS. The Basic system sells for \$14,000 under DOS and \$18,000 under OS. The audit analyzer sells for \$19,500 under both DOS and OS. More information is available from the vendor at 50 Washington St., Norwalk, Conn. 06854.

USENIX

1983 Summer Conference, July 12-15, 1983,
Toronto, Canada



The 1983 Summer Conference of the USENIX Association and Software Tools Users Group will be held in Toronto, Canada July 12-15, 1983 at the Harbour Castle Hilton. This announcement provides information about the dates of events, as well as who to contact for further information. A pre-registration packet will be mailed on request including both conference and hotel registration forms.

USENIX Technical Sessions—July 13-15, 1983

Session topics include UNIX* programming tools, networks, graphics, applications, languages, hardware, word processing, etc.
 Invited speakers and panel discussions will round out the program.

Software Tools Users Group Meeting—July 12, 1983

This meeting's topics will include enhancements, standardization and consolidation of all the various implementations into a compatible system.

UNIX* Tutorials—July 12, 1983

More specific information on Tutorials is included in the pre-registration packet. Past subjects have included introduction to UNIX* text processing and documentation and basics of writing UNIX* Device Drivers and 4.2 BSD.

Vendor Exhibits—July 12-14, 1983

A vendor exhibition will be held at the Harbour Castle Hilton on July 12-14, 1983. The key companies in the UNIX* industry will display new products.

To receive registration or vendor information, contact
 Rogal Boston, Inc., 72 Langley Road, Newton Centre, MA 02159
 (617) 965-1000

*UNIX is a trademark of Bell Laboratories.

Hibol Tool Updated For Cobol

EDEN PRAIRIE, Minn. — Delphi Data Systems, Inc. has released a new version of its Hibol productivity package for Cobol programmers working on IBM 370 and compatible hardware running under the DOS and OS operating systems with CICS.

A 60-statement Hibol program typically results in an 800-statement Cobol program and the automatic generation of CICS screen maps plus documentation, a spokesman said. Hibol has been enhanced to include on-line/interactive functions including dynamic menu controls, security, operator help/assist and data dictionary.

In addition, the software's menu/security system provides controls by user, department, password and terminal, the spokesman pointed out.

On-line programs can include menus, file maintenance and file inquiries with a single program handling multiple screens and files. Batch programs can process multiple files and produce multiple reports.

The generated programs are ready to compile, the spokesman said.

Hibol can generate images of screens/reports with descriptions of the accompanying data elements. The information can be automatically merged with user-written material to produce documentation.

The DOS version costs \$19,995 with the OS version priced at \$24,995. Delphi Data Systems is located at 9905 Hamilton Road, Eden Prairie, Minn. 55344.

M. Bryce Unveils Addition To Its Pride-ASDM Family

CINCINNATI — M. Bryce & Associates, Inc. has announced an addition to its Pride-Automated System Design Methodology (ASDM) product line.

Called Project Management Command & Control 2 (PMC2), the product is an automated extension of the Pride-ASDM project management system. It includes features for planning, estimating, scheduling, reporting and controlling project activities, a spokesman said.

PMC2 controls systems development activities, verifying that the ASDM method is being followed without depending on verbal confirmation. The product is said to help prevent the staff from circumventing accurate reporting.

The package consists of features for project planning, project impact

analysis, preparing estimates and schedules, resource allocation, preparing assignments, time reporting, user chargeback, querying project information, skills inventory, project status reporting and maintaining and controlling the project data base, the spokesman said.

Written in Ansi Cobol, the software initially will be available on IBM OS, Honeywell, Inc. Gcos, Hewlett-Packard Co. HP 3000 and Digital Equipment Corp. VAX-11 systems. The price is \$30,000 with availability scheduled for the fall. Pride-ASDM costs \$80,000, the spokesman said from 1248 Springfield Pike, Cincinnati, Ohio 45215.

ADR will make two major announcements in the next several months covering:

1. ADR's mainframe software and the Personal Computer.
2. A major software product to dramatically reduce the applications backlog.

The importance of these announcements will be directly disproportionate to the size of this ad.

**APPLIED DATA
RESEARCH**

Route 206 & Orchard Rd., CN-8, Princeton, NJ 08540

DBMS Released For VAX Users

CAMBRIDGE, Mass. — Software House, Inc. has unveiled a relational data base management system (DBMS) for Digital Equipment Corp. VAX-11 computers running under the VMS operating system.

System 1032 reportedly employs an inverted file structure for fast retrievals; a built-in, block-structured programming language for quick applications development; asynchronous I/O for efficient resource utilization; and a host language interface for Cobol, Fortran, Basic, Macro, C, PL/I and Pascal applications programmers.

Experienced programmers can control efficient queries, updates and output using an integrated structure of commands and system options. Novices are aided by a scheme of system defaults, flexible command entry and on-line user assistance, the vendor said.

Features include flexible relationships, fast data retrieval and total control for programmers, according to the vendor.

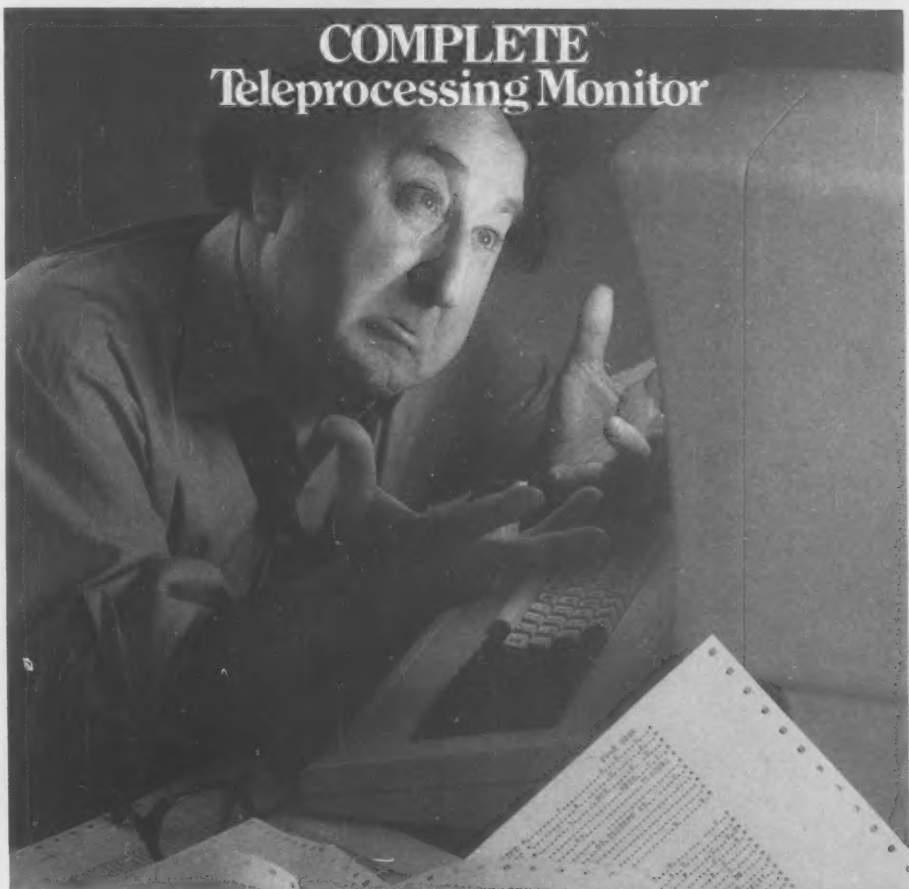
A typical System 1032 license for the VAX-11/780 costs \$40,000, Software House said from 1105 Mass. Ave., Cambridge, Mass. 02138.

Fortran Compiler Added to Supra

KANSAS CITY, Mo. — United Information Services, Inc. (UIS) has announced that a Cray Research, Inc. Cray-1 Fortran compiler (CFT 1.10) is available on its Supra batch service based on a Cray-1 computer.

CFT 1.10 conforms to the Fortran 77 standard and accepts most of the older Ansi X3.0-1066 syntax, a spokesman said. The new Fortran 77 features include character data type and generic functions.

UIS maintains service operations in the U.S., Canada and the UK with major data centers located in Kansas City, Mo., Pittsburgh, Pa., and London. Prices for the Fortran compiler are based on usage through UIS, P.O. Box 8551, Kansas City, Mo. 64114.



Communication without aggravation.

The very word "teleprocessing" has the ring of urgency, a tool to provide quick response in a dynamic data processing environment. So why do most TP monitors available for IBM 4300 and 370 systems take up to 2 years to develop an application and several weeks to make even minor changes? One reason is that some systems don't support online interactive development. Some have such a complex operating system interface that only the most experienced system programmers can communicate with the system. And some force you to waste time and computer resources using separate development and production systems because they don't offer a comprehensive storage protection scheme.

COM-PLETE from Software AG is

attuned to the real-world needs of teleprocessing users. Those applications that take as long as 10 to 20 months to develop with other systems can be finished in 1 to 2 months with COM-PLETE. Highly specialized programmers aren't required because COM-PLETE is user friendly and operating system independent. Also, built-in storage protection means you can handle development and production on the same system.

If you're getting nowhere fast with a conventional TP monitor, or are evaluating alternatives for a new 4300, consider the COM-PLETE alternative from Software AG.

Software AG of North America, Inc.
11800 Sunrise Valley Drive
Reston, VA 22091
(703) 860-5050

- ☐ Please send me information on COM-PLETE.
☐ Please send me information on your FREE DB/DC seminar.

Name _____
Title _____
Company _____
Address _____
City _____ State _____
Zip Code _____ Telephone () _____
CPU _____ Operating System _____ Release _____

SOFTWARE AG
OF NORTH AMERICA, INC.

CW490



**New IBM System/36 uses
the strengths of our System/34.
And goes on from there.**

It's a new computer with even higher levels of performance than one of our most popular computers.

We doubled the memory, up to 512K bytes. Boosted disk storage up to 400 megabytes. Added a magnetic tape storage unit. Increased local work stations from 16 to 30, including color displays.

And the System/36 has available hundreds of software packages, covering most major industries. Many

are recompiled from programs that are already running on our System/34; others are the new system's own software, including office applications like text management, spelling check, local electronic mail and color graphics.

System/36 can operate stand-alone with as many as 64 remote work stations, among them the IBM Personal Computer. It can also work in a distributed processing network communicating with a large host or with other System/36s. And, if you're moving up from a System/34, your I/O investment is protected because virtually all of its peripherals are able to work on the new system.

What's more, System/36 is very friendly. Users are

Announcing a new computer people have been using for years.

guided by easy-to-understand menus. A HELP key simplifies things, even for first-time computer users. Another key lets them start over without having to retrace every step.

Extensive diagnostic features troubleshoot automatically, and even correct problems as you work.

It's one of the most thoroughly tested products we've ever made. We gave it the equivalent of a century of testing before we put it on the market.

To arrange for a demonstration or to get a free brochure call your local IBM sales office or our toll-free number, or send in the coupon.



IBM System/36

Write today to: IBM, DRM, Dept. IT3, 400 Parson's Pond Drive, Franklin Lakes, New Jersey 07417.

- ☐ Please send me a free brochure about the IBM System/36.
☐ I'd like a free demonstration of the IBM System/36.

NAME _____ TITLE _____

COMPANY _____

STREET ADDRESS _____

CITY _____ STATE _____ ZIP _____

BUSINESS PHONE _____

Call *IBM Direct* 1 800 631-5582 Ext. 90.
In Hawaii/Alaska 1 800 526-2484 Ext. 90.

Allows DPS 6 Compatibility Processor Targets Liberator

SAN JOSE, Calif. — Western Business Computers, Inc. has released a command processor which allows its Liberator operating system to run on Honeywell, Inc. DPS 6 minicomputers under the

Gcos 6 Mod 400 operating system.

Liberator I transports field-tested application programs originally written in QBasic for Qantel Corp. systems onto Honeywell and

permits them to coexist with resident programs written in any other language, a spokesman said. The operating system allows DPS 6 users to run other software from Western, including the Maxpro library of off-the-shelf business applications.

The operating system costs \$15,000 from Suite 220, 2025 Gateway Place, San Jose, Calif. 95110.

Insurer Reaps Benefits With End-User Facility

(Continued from Page 47)
host computer are reduced to a log-on procedure. "From that point the user is truly able to 'wing it' by straightforwardly answering the questions and selecting the options presented by the Manager's Workbench," he added.

New reports can be created on the spot by stepping through the questions posed by the workbench. The facility's screens help and prompt the user to complete the job. "The software is deliberately very tolerant and forgiving. It expects mistakes and second thoughts and engages in a dialogue which encourages the end user to relax and use the computer without intimidation," Mulvihill asserted.

Equitable's first use of the workbench was in conjunction with an information system the firm had developed for the public bond and direct placement investment teams.

Before the workbench was integrated into this application, the information system was highly touted by the technical staff and shunned by the investing professionals. "Everyone agreed that the system could do virtually anything they might ask of it; however, a programmer, and one specially familiar with the system design, had to do the asking," he reported.

With the addition of the Manager's Workbench, the use of this system has changed dramatically, he continued. Approximately 60 investing, managerial and administrative personnel

have sought and received training. About a dozen of the investing professionals now regularly and routinely use the system as an integral tool in doing their jobs. The remaining people are occasional, sporadic users.

The absolute cornerstone of this success is the Manager's Workbench, according to Mulvihill. "One portfolio manager spoke for all in recounting how the workbench 'enabled me to work alone, at my own pace, where I could overcome the intimidation of the machine without being afraid of making a mistake in front of another person.'"

The most prominent success of the workbench has been in its use by Executive Vice-President Leo M. Walsh, who heads financial operations. After he volunteered to become "computer literate," Walsh was given access to virtually all of the on-line inquiry facilities in investment affairs. He has since become an astute, active user of the computer facility and has required a minimum of technical support.

'EMS' Offered On T/S Basis

BERKELEY, Calif. — Economic Sciences Corp. has announced the availability of its Economic Modeling System (EMS) corporate modeling and data management product on time-sharing through Cisinetwork Corp.

EMS is an application development program that integrates data management, financial and econometric modeling, report writing, forecasting techniques, a procedural language and graphics, a spokesman said.

EMS can integrate macroeconomic and microeconomic data from external and internal sources. International and domestic data bases, including forecast and historical data bases from Wharton Econometric Forecasting Associates, are accessible via EMS on time-sharing or in-house installations.

Charges vary depending on resources used from Economic Sciences at 2150 Shattuck Ave., Berkeley, Calif. 94704.

'Transact' Announced For Prime 50 Series

NATICK, Mass. — An on-line application generator and transaction processing system developed by Database Systems Corp. of Phoenix is available through the Prime Solutions program, Prime Computer, Inc. has announced.

Called Transact, the product runs on all Prime 50 series computers and is compatible with other Prime software. It reportedly supports development, maintenance and operation of transaction processing applications.

Transact supports all

file management system-like files interactively. Users can simultaneously input, update and manipulate data files, the spokeswoman said.

Transact is composed of Executive and Run modules. The Executive module is used to produce and administer transaction processors. The Run module forms the basis for specific transaction processors.

The product is priced at \$12,500 from Database at Suite 201, 1846 E. Camelback Road, Phoenix, Ariz. 85016.

VAX SOFTWARE!

PACS™ with EZLOG™ is today's standard in:

**Resource Accounting
Performance Monitoring
Internal/External Billing
Project-Based Accounting**



PACS has been accepted into Digital's EAS Library.



Signal Technology, Inc.

5951 Encina Rd., Goleta,
California 93117 (805) 683-3771
Outside California Call Toll Free
(800) 235-5787

VAX is a registered trademark of
Digital Equipment Corporation

David Recommends Osborne

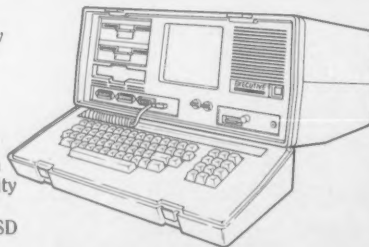
David Jamison Carlyle Recommends Osborne.

The EXECUTIVE—announced by Osborne, available from DJC.

The EXECUTIVE—the exciting new portable computer from the company that pioneered portables—breaks Osborne's own price/performance standards.

A few choice specs: 128K of RAM (280A, 4MHz). A 7" amber screen with 24 lines of 80 columns. Two dual density 5¼" drives. Universal ASCII and IBM 3270 emulation. Both CP/M 3 and UCSD P operating systems. And the rest of the specs are just as impressive.

For the newest in portables, call DJC and ask for Osborne.



Call or send for DJC's 1983 Terminal Comparison Chart, as seen in Computer Decisions.

THE DAVID JAMISON
CARLYLE CORPORATION
5700 Buckingham Parkway
Culver City, CA 90230

New York
New Jersey

Illinois
Texas
Colorado
Hawaii

California:
San Francisco
Los Angeles
Irvine



THE DAVID JAMISON
CARLYLE CORPORATION

(212) 686-9774
(201) 780-0802
(800) 526-2823
(312) 790-4466
(713) 556-5512
(303) 426-9508
(808) 531-5136

(415) 254-9550
(213) 410-9250
(714) 851-5011

CRT CABLES SAVE UP TO 50%

• Fast Service • Guaranteed Products •

Belden 9207 Twinaxial for
SYS/34-38, 5520, 5260, 5280

Belden 9269 Coax for
303X, 4331, 8100, 370, SYS/3

ALSO - Teflon Air Plenum Cable,
Lightning Protectors, Switch Boxes,
Wall Plates, RS232C Assemblies, all
of Belden's Cable Products Available.

Cord Cable Company

1704 - 3rd Ave. S.E.
Rochester, MN 55901

1-800-533-1576 or 507-282-7252

Cellular Radio Opens Frontier Of Opportunity

By Katherine Hafner

CW Staff

Cellular radio, hailed as the mobile telephone of the future, is a vanguard in the telecommunications revolution.

For voice transmission via cellular radio, the market is a vast frontier of opportunity. In March 1982, the Federal Communications Commission (FCC) established rules for commercial operation of cellular radio and is currently in the process of reviewing and granting operating licenses.

Communications providers such as AT&T, MCI Communications Corp., GTE Corp. and Western Union are all investing in the cellular future. On the equipment supply side, Motorola, Inc., Fujitsu Ltd., Anaconda-Ericsson, Inc. and Northern Telecom, Inc. are also banking on what they see as the great promise of cellular radio.

The next year will certainly see cellular radio leave the conceptual realm and take root in people's automobiles. By 1990, cellular radio will be a \$4 billion industry, according to Jerry Lucas, president of Telestrategies, a McLean, Va.-based consulting firm specializing in telecommunications technology.

Cellular radio works by means of a series of cells with a radius of one to eight miles, each containing its own low-power transmitter and computer controller. Unlike existing mobile telephone networks, where a channel can handle only one call at a time, separate

(Continued on Page 58)

LM Ericsson Renames Firm, Announces Three Products

NEW YORK — In a bid to "compete with American Bell, IBM and other major firms" for the U.S. information and communications market, the Swedish telecommunications company, LM Ericsson, has announced three new products and has renamed its North American company, Anaconda-Ericsson, Inc.

The newly named firm, Ericsson, Inc., a joint venture of LM Ericsson and the Atlantic Richfield Co., will be responsible for the marketing and servicing of the new U.S. products, which include a software functional plug-compatible computer system, a computer-based bank branch system and a voice/data digital information-switching system.

Alfaskop 41, Ericsson's modular multi-function system, is a software plug-compatible system designed primarily for compatibility with IBM's 3270 Binary Synchronous Communications and the Sperry

Supports SNA/SDLC

Memorex Unveils Controller

CUPERTINO, Calif. — Memorex Corp. has introduced a cluster controller said to support IBM's Systems Network Architecture/Synchronous Data Link Control (SNA/SDLC) communications protocol.

The Memorex 2074 is said to support the remote I/O operations of up to 32 devices with IBM Category A interfaces. It is functionally equivalent to models of the IBM 3274 remote cluster controller, a vendor spokesman said.

Corp. Uniscope system, the company said. It can be configured as a single workstation or as a multiterminal system interacting with host computers. The 41 can also perform its own IBM Systems Network Architecture/Synchronous Data Link Control (SNA/SDLC), Sperry UTS and Digital Equipment Corp. VT100/50 emulations.

System modules include a communications processor, flexible disk units and terminals, each with its own microprocessor. The company noted that the independent microprocessor in each unit increases the ability for such tasks as on-line communications, word processing and personal computing.

The 41's communications processors include three models, two with 64K bytes of internal memory and one with 32K bytes of internal memory. Two models of the

(Continued on Page 56)

Harris Releases Enhancements To Its Family of DDP Systems

DALLAS — Harris Corp. has announced product enhancements to its entire line of distributed data processing (DDP) systems.

Harris DDP systems, the 1600 family and the Mind Series now include buffered synchronous and full-duplex support for IBM's Systems Network Architecture (SNA) emulation, according to a vendor spokesman.

Systems with this capability are said to have SNA line speeds up to 56K bit/sec in half-duplex or 19.2K bit/sec in full-duplex mode, the spokesman for the vendor maintained.

There is no extra charge for the SNA feature, and the spokesman said 56K bit/sec

and 19.2K bit/sec cost \$9,990 and \$8,316, respectively.

Harris is also offering a streamer magnetic tape drive for all 1600 products and the Mind Series, according to the vendor spokesman.

Priced at \$16,016, the option is designed for streaming data "on the fly" at 160K bit/sec nominally, the vendor spokesman said. In addition, it reportedly can be used in nonstreaming applications as well, the spokesman said.

More information is available from Harris' Information Terminals Group, which can be reached at 16001 Dallas Pkwy., P.O. Box 400010, Dallas, Texas 75240.

The controller operates in a point-to-point or multipoint environment at transmission speeds up to 56K bit/sec. It will communicate with the IBM 370, 30 series, 3080 series and 4300 series processors. It is also compatible with data links controlled by IBM 3704, 3705 and 3725 communications controllers and with the Integrated Communications Adapter of the 4331, the vendor spokesman said.

The 2074 is designed to be installed and customized for operations by the customer, the vendor spokesman said. For customizations, users must complete a Memorex-provided configuration work sheet and key in that information via a display station attached to the 2074.

Throughout the procedure, users are prompted by a series of menus displayed in English along with the appropriate sequence codes, according to the vendor spokesman.

First customer shipments of the 2074 are scheduled for September, and the purchase price will begin at \$13,595, the vendor spokesman said.

More information is available from Memorex, which can be reached at M/S 12-39, San Tomas and Central Expwy., Santa Clara, Calif. 95052.

Smart Controller Out for IBM CPUs

MISSION VIEJO, Calif. — JDS Micro-Processing has introduced an intelligent controller for connection of asynchronous Ascii terminals, microcomputers and printers to the IBM 370, 4300 and 30 series.

The Hydra II is said to eliminate the need for 3705, 270x, 3274 controllers, protocol converters and remote software. The unit reportedly allows the connected units to appear as local IBM 3278s to the IBM host, according to a spokesman for the vendor.

The eight-port Hydra II costs \$6,900, and the 16-port version costs \$9,900, the spokesman said.

The units are available through the firm's marketing arm, Diversified Data Resources, Inc., which can be reached at Suite 7, 25 Mitchell Blvd., San Rafael, Calif. 94903.

'Microgate' Extends IBM Micro

AUSTIN, Texas — Gateway Microsystems, Inc. has announced Microgate, an integrated hardware/software product said to bring communications capability to the IBM Personal Computer.

Microgate reportedly emulates the IBM 2780/3780 Binary Synchronous Communications protocol, with several extensions specifically designed to complement the utilization of a Personal Computer in the corporate communications environment. The product is highly configurable, allowing communications with a variety of computer systems. Microgate operates either synchronously or asynchronously, supporting modems with data rates rang-

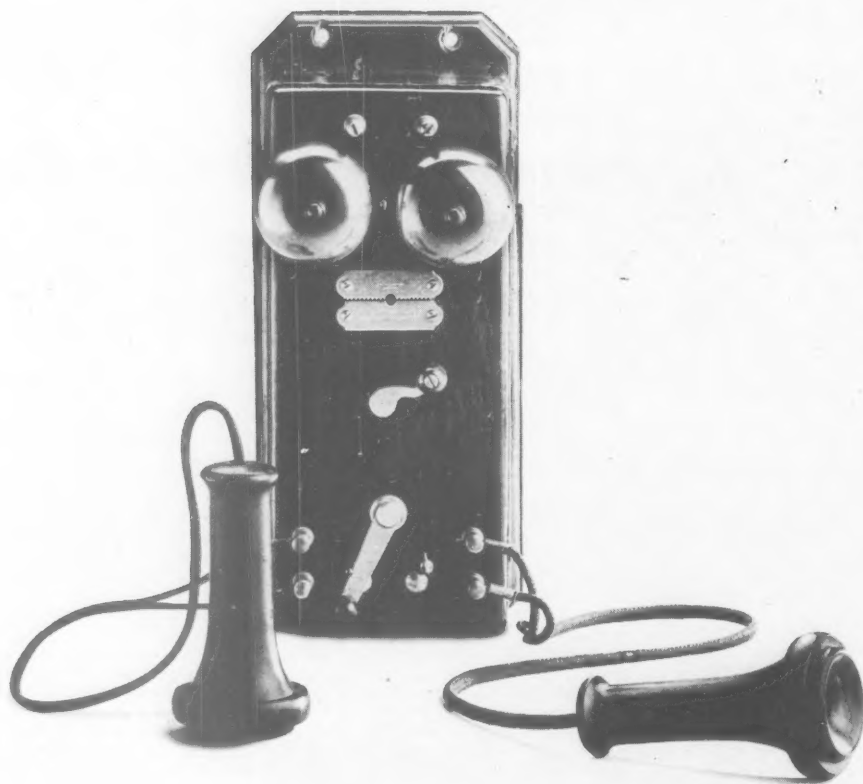
ing from 300 to 4,800 bit/sec.

It requires minimal user training, because it is self-documenting and offers multilevel, on-line operator assistance with each command. It operates interactively or in batch mode and supports batch transmission of information in either attended or unattended mode.

Microgate is offered at a single-unit price of \$895, including serial communications controller, modem cable, licensed software on diskette and user documentation.

Gateway Microsystems can be reached through P.O. Box 10998, Austin, Texas 78766.

THE BEGINNING OF A REVOLUTION.



In 1876, we had an idea that changed the way America does business. The telephone.

At the time, people laughed at it. It was a gimmick, they said, or a toy.

Yet it launched a communications revolution. And now, no one can imagine doing business without it.

Today, however, business needs more than telephones. Which is where we come in.

We're American Bell Advanced Information Systems.

We offer telephones, and a great deal more.

Everything from a basic business phone system to one that includes keyboards, printers, data screens, and message centers,

all linked by an applications processor.

Small companies can start with a basic system; as they grow, the system can expand with them. Because everything is modular, obsolescence becomes obsolete.

As for larger companies, they'll find the most sophisticated systems in the industry. Integrating voice, data, office, building, and network management functions.

Large or small, our business systems are designed to help your people do their jobs more efficiently.

So your company can compete more effectively. And win.

Why can we offer all this when no one else can?

American Bell Advanced Information Systems is the new,

DITTO.



deregulated subsidiary of AT&T. Which means we start with the resources of AT&T behind us.

More than a century of experience, building and running the most reliable communications system in the world.

We have 19,000 employees and 206 sales offices nationwide.

Including 8,000 sales and technical support people, backed by the largest service force in the world.

All our research and development comes from Bell Labs. In fact, 4,000 people from Bell Labs now work just for us.

Our hardware and software are made by Western Electric, whose history of product reliability is unsurpassed.

And as a deregulated company, we are now free to compete

for your business. With consistent and competitive nationwide pricing.

With new products on faster timetables.

With a new responsiveness to your needs, and a new commitment to customer service.

To hear more about our revolutionary ideas, from an Account Executive trained in your business, just call 1-800-AIS-1212, Ext. 898.



American Bell
Advanced Information Systems
An AT&T Company

Two Graphics Terminals Introduced by Psitech

TUSTIN, Calif. — Two dual-processor color graphics terminals have been introduced by Psitech.

The GTC 214 and 224 are based on a graphics engine on which resides one of two 8/16-bit processors. The second identical processor is housed on the I/O board that controls all user interfaces.

The units feature one standard Ascii character set

and two user-programmable character sets.

The GTC 224 is said to feature a rainbow palette, which allows the display of any eight colors from a selection of 4,096 choices, while the GTC 214 features eight color choices.

The GTC 214 costs \$7,000, and the 224 costs \$7,400 from the vendor at 2842-C Walnut Ave., Tustin, Calif. 92680.

LM Ericsson Unveils Info Products

(Continued from Page 53)

disk units handle one disk plus an optional disk, and one handles only one disk, Ericsson said.

The terminals include three models, each with 64K bytes of internal memory and 80 char./line. Two supply monochrome color, and one has four-color capability. The Alfaskop 41 in its basic configuration is priced at \$4,477 per terminal and will be available in July.

The bank branch on-line teller system, called the System 2100, is based on three major subsystems that can be configured to meet the needs of large and small banking institutions. The 2100 consists of computers interconnectable via a direct memory access channel or a local/remote terminal bus, depending on computer type, Ericsson said.

The components of the system include an Ericsson

minicomputer-based Local Computer, a 16-bit Intel Corp. 8086 microprocessor-based Communications Computer and 16-bit Terminal Computer.

The minicomputer-based Local Computer has four models with internal memory ranging from 128K bytes to 2,048K bytes and disk storage capacity from 880M bytes to 1,760M bytes. It is designed for use in regional centers or large bank branches for local DP and data base handling.

Two 16-bit communications processors are available which function as front-end computers to the Local Computer or as self-contained units for small- and medium-size branches. The Communications Computers come with 512K bytes and 640K bytes of internal memory and four- and 10-network port capabilities. Both models have 20M-byte disk storage capacity.

The Terminal Computer terminal is a stand-alone device that controls one or two workstations operating separately and independently of each other. The System 2100 will be available the first quarter of 1984 and will cost between \$4,200 and \$6,000 per terminal, depending on configuration.

Also introduced was the MD 110 digital/voice data switch, which Ericsson said digitizes voice input. It can run on communications lines from 9,600 bytes to 56K bytes and can handle from 100 to 20,000 voice/digital data stations.

This unit is priced at about \$1,000 per connection. It will be available in the first quarter of 1984. More information on these products is available from Ericsson, which is located at Greenwich Office Park No. 3, Greenwich, Conn. 06830.

Stack the results in your favor with NEC modems.

Unsurpassed reliability. State-of-the-art technology. That's what you can count on with NEC modems — and for some very special reasons.

NEC is a major modem manufacturer. But we're also one of the world's leading, most diversified manufacturers of products that use modems. Telecommunications. Data communications. Computers. Facsimile, plus more. So we know from experience what works best.

NEC Central Research Laboratories constantly feed us dynamic new ideas and concepts, too, so we stay on the leading edge of modern technology. Our compact high-speed modems and auto-dial/auto-logon modems are the most advanced and economical of their type. And our broad product line includes total Bell System compatibility from 300 to 2400 bps.

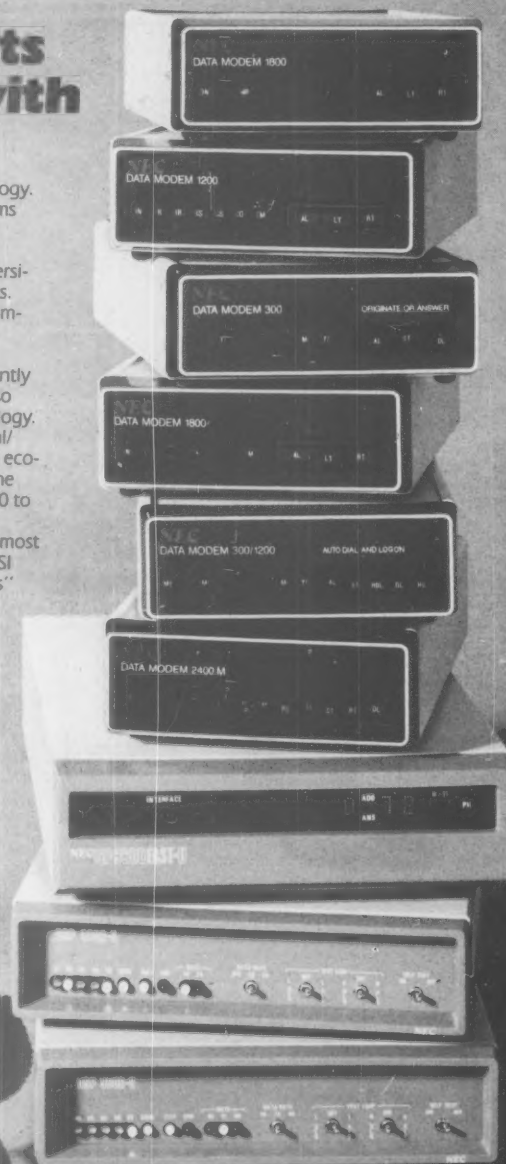
NEC reliability comes from manufacturing most of our own components, including our own VLSI microcomputers. Combined with "Zero Defects" quality control, this helps our modems achieve a MTBF in excess of 9 years.

Our nationwide distributor network backs you with local support. And for direct technical assistance, we furnish a 24-hour toll-free number you can call.

Stack the results in your favor by contacting us at 1012 Stewart Drive, Sunnyvale, California 94086 (408) 737-7711, or (800) 538-8166.

Data Communications Products
NEC NEC America, Inc.

See us at ICA, Booth #1120



National Trade Association wishes to donate computer hardware or funding to a worthy 'non-profit' organization or project. Your cause should have as its 'mission' assisting individuals in establishing self-sufficiency through training on or utilization of computer equipment. Please send a brief description of your organization or project to:

Reply to CW-B4105
Computerworld
Box 880
Framingham, MA 01701



© Sperry Corporation, 1983

The computer system that made mothers' eyes glisten and management faces glow.

A special bouquet of flowers says love in a way that nothing else can.

Ask the more than 1,000,000 mothers who received them from distant sons and daughters through the floral network of Florists' Transworld Delivery (FTD) this Mother's Day.

It was a big job for FTD® and this sort of peak surge could strain an ordinary computer system to the breaking point. But FTD doesn't use an ordinary system. They use a Sperry 1100 Series central computer, backed by the Mapper System. There is other equipment involved, but Mapper provides for very special

applications to handle the very special needs of FTD.

When your flower order is sent via this network, the florist who will be making the delivery has all the information quickly, and in printed form. Eliminating the possibility of error.

You can't expect Florists to become computer experts, and that's why this system was designed to be so easy to use. Non-DP people can master it in a day. And it's all in plain English.

An advantage of Mapper, according to FTD Executive Vice President, William Maas, is that, "Complicated internal analyses and customized management

reports can be designed and tested in less than half the time it takes to write a program in COBOL."

The Sperry Mapper System also allows FTD management to provide inventory control and telemarketing to its floral members.

In the words of Bill Maas, "Our task would be far more difficult without Sperry...without the Mapper System."

Mapper. The system that brings joy to mothers and management.



FTD and its emblem are registered trademarks of Florists' Transworld Delivery Association. Mapper is a trademark of Sperry Corporation.

We understand how important it is to listen.

Cellular Radio Offers Vast Wealth Of Opportunity for Voice, Data

(Continued from Page 53) cells allow a number of calls to be handled simultaneously in the same frequency band. As the signal in one cell weakens, it is picked up by a transmitter in the next cell without interrupting communications.

The beauty of cellular radio is said to be in its tremendous capacity and power. Mobile telephones, currently a symbol of high status by virtue of the fact they are so difficult to obtain, will become much more accessible.

Voice, however, is just one medium that can be transmitted via cellular radio.

Even more far-reaching, perhaps, are the implications of data transmission over cellular radio. "You can do anything over cellular radio that you can do over a regular telephone," according to Stu-

art Crump, editor of *Cellular Radio News*. "Essentially, it's a regular telephone not tied down by wires, so it would be possible to operate any standard data communications devices over a cellular phone."

The list of applications for data transmission via cellular radio is extensive. A salesman on the road, for instance, would be able to use a portable terminal for inventory inquiries.

"When you look at the amount of time people spend out on the road, you see the potential," Lucas noted. "Cellular radio can fill a lot of the idle time spent in commuting."

In the speculation surrounding cellular radio, only one aspect of the new technology appears to be cause for concern. As a signal

switches from one cell to the next, a slight break lasting only a few msec occurs. The outage is imperceptible to the human ear and would not affect a conversation. But the data flowing at projected cellular radio speeds of 1,200 bit/sec is much more sensitive and could easily be interrupted.

The problem, however, could be solved by resending blocks of erroneous data.

But even if the transmission of data via cellular radio is technologically feasible, it still faces enough hurdles for industry soothsayers to predict that data transmission will not crystallize for another three to five years.

The FCC is in the process of reviewing and granting applications for mobile telephones as voice transmitters, but has given little consideration to the regulation of data transmission.

In addition, since cellular radio appears to be filling a void in mobile telephones — it is estimated that waiting lists for mobile telephones total 50,000 names — the industry is focusing its immediate attention on voice transmission, leaving the market for data transmission virtually unexplored.

"We're looking at data applications, but the people reviewing the various markets haven't completed their analyses," a spokeswoman for Motorola said. "It will be at least several months before we can discuss data applications."

Charles Robbins, a telecommunications consultant for International Data Corp. in Framingham, Mass., called data transmission a "very, very difficult" issue.

In Robbins' view, there remain a number of questions to be answered about data transmission via cellular radio. "Would people pay \$1,000 or more for a modem device in the unit? What if the data gets out of sync? What if it is intercepted? Should it be encrypted?"

While industry pundits generally agree that data transmission will arrive on the heels of voice, disagreement centers on how much later it will arrive. Some say data transmission will emerge in the next two years, but others say it will not happen before the end of this decade.

The most that can be said at this point, according to one analyst, is that once voice transmission becomes a reality, the industry will have the time and inclination to take stock of what is in store for data transmission.

Users of Encore 200 Get Monitoring Capability

RIDGEFIELD, Conn. — Users of Digitech Industries, Inc.'s Encore 200 portable network analyzer can now monitor data communications based on Burroughs Corp.'s Bisync, Sperry Corp.'s Uniscope and Digital Equipment Corp.'s Digital Data Communications Message Protocol (DDCMP) software.

With software for Burroughs' Bisync, four modes — poll, select, fast select and contention — reportedly can be monitored between modems and remote TD-831 ter-

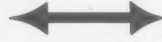
minals, a spokesman said.

Software for Sperry's Uniscope will allow monitoring between host and UTS-100, 200 and 400 terminals, the vendor said. DDCMP software will allow monitoring on lines using DEC's data communications message protocol.

The three software programs will be supplied on 5¼-in. disks without charge to existing and future Encore 200 owners. Encore 200 costs \$16,500 from the firm at 66 Grove St., P.O. Box 547, Ridgefield, Conn. 06877.

IBM 3270 Protocol Conversion as low as \$665 per channel

BISYNC
SNA/SDLC



ASYNC ASCII
CRT'S
PRINTERS
PC'S



DATALYNX™/3274

- Emulates IBM 3274-51C up to 19.2 kbps
- 5-9 async PCs, CRTs and printers in emulation of 3278 or 328X to 1 or 2 hosts
- PC support for IBM PC (\$60), HP-120/125, Apple II/III, Xerox 820, Osborne, VT-180, Rainbow, COMPAQ, TRS 80-II, Direct, Etc.
- File transfer program for IBM PC
- User-friendly menu setup
- Screen painting for fast response
- Password security and inactivity disconnect for dial-up users
- Concurrent 3278/3287 operation on one port



LOCAL DATA

2701 Toledo St.
Torrance, CA 90503

See us at ICA Booth 1046

Phone: (213) 320-7126
TELEX 182518

A Major Conference

Microcomputers and Organizational Productivity

June 7 & 8, 1983
Boston Park Plaza Hotel
Boston, Massachusetts

Panel Discussions on:

- Software Development
- Management Experience
- Vendor Demonstrations of Micro Software for Major Organizations

Keynote Speakers:

Peter G.W. Keen,
Micro Mainframe, Inc.
C. Lawrence Meador,
Research & Planning, Inc.
Mitchell Kapor,
Lotus Development Corp.
Frederic G. Whittington,
Arthur D. Little, Inc.

Contact: Micro Conference
215 First Street
Cambridge, MA 02142
(617) 864-0900

introducing Dial-Up 3270

LineMaster

An intelligent device for dial-in access to your mainframe 3270 line.

LineMaster is a communications watchdog which keeps a line in service until a user dials in.



- For any remote 3271/4/6 line, up to 19.2K baud.
- Compatible with any 3270 emulator including microcomputers.
- Connects between modem and mainframe.
- Installs in minutes.

\$639.

MF MicroFrame, Inc.
205 Livingston Avenue
New Brunswick, NJ 08901
(201) 828-4499

BECOME A CICS CONSULTANT IN JUST TWO WEEKENDS.

We know that it's tough for consultants to fit a weekday course into their hectic schedules. That's why SysEd offers special CICS training courses for consultants that you can complete in only two weekends.

Our intensive weekend courses in Command Level, Macro Level, Internals, Application Design and VSAM are designed to make even non-CICS programmers immediately productive in a CICS environment. Each SysEd course provides a true-to-life learning experience with "hands-on" use of the computer; up-to-date, practical information; a solid foundation in CICS fundamentals and insights into advanced materials; and individual attention from highly qualified instructors.

SysEd's special weekend courses for consultants are held regularly at our classroom/computer facilities in New York City, Chicago, San Francisco and Dallas. Because class size is limited, applications are on a first come, first served basis. For more information, call David Shapiro (212) 889-3386.

SYS-ED

ONE PARK AVENUE, NEW YORK, NY 10016 • (212) 889-3386

Storage Products Bow at NCC State-of-the-Art Recording Unwrapped

ANAHEIM, Calif. — At the recent National Computer Conference (NCC) here, a number of vendors introduced storage media products, several incorporating state-of-the-art recording technology.

Control Data Corp., for example, introduced seven disk products, five of which have thin-film data recording heads and disk controllers that are compatible with Intel Corp. Multibus computer systems.

Aimed mainly at the OEM and systems integrator, the CDC disk products include a 3½-in. Cricket Winchester disk drive that features 6.38M bytes of unformatted storage using thin-film recording heads and a plated media. The unit costs \$465 in OEM quantities, CDC said.

CDC also announced a 14-in. OEM Winchester disk drive that also employs thin-film recording heads. The unit can store up to 825M bytes of data with a recording density of 15.4K bit/in. and a track density of 960 track/in. Called the CDC 9771 Expanded Module drive, the unit has a data transfer rate of 14.5M bit/sec and costs \$9,840 in OEM quantities. The units will be available in

the third quarter of 1983, the vendor said.

Two half-height 5¼-in. floppy disk drives were also announced by CDC. Called the CDC 9428 and 9429 floppy disk drives, the units are designed

for use with microcomputers and small business systems. The units provide up to 1M byte of unformatted data storage. The Model 9428 includes 40 tracks per recording surface at a track density of 48 track/in. The

number of tracks and track density is doubled in the Model 9429 drive.

The 9428 costs \$150, and the 9429 costs \$185, CDC said.

CDC also announced the 9415-80, an 80M-byte drive that employs thin-film recording heads. The unit has five disks in a fixed, sealed module. The drive has a recording density of 9,500 bit/in. and an average data access time of 35 msec. The unit costs \$1,875 in OEM quantities, the vendor said.

Finally, CDC announced a single-board controller that can connect up to four removable and/or fixed disk drives using a standard storage module device interface to Multibus-based systems.

Called the CDC 9090, the unit can handle up to 320M bytes of removable data storage and up to 1.3G bytes of fixed data storage. The unit costs \$1,745 in OEM quantities, the vendor said.

More information on the disk products is available through P.O. Box O, Minneapolis, Minn. 55440.

Fujitsu Announcements

Fujitsu America, Inc. has announced seven fixed disk drives and one magnetic tape drive.

Highlights of the Fujitsu lineup include an addition to its line of 5¼-in. disk drives, a unit that boasts 26M bytes of data storage. The unit has a buffered stepper seek time of 85 msec and costs \$1,250.

(Continued on Page 60)

Isomax Offers Vertical, Horizontal Storage

By Tom Henkel
CW Staff

ROCHESTER, N.Y. — Eastman Kodak Co. here has introduced what is claimed to be the first floppy disk media capable of storing data in both vertical and horizontal formats. The disk — called the Isomax floppy disk — was unveiled recently at the National Computer Conference in California.

Isomax's media reportedly has up to ten times the storage capacity of a standard floppy disk, extending storage capacity of a 5¼-in. floppy disk from 1M byte to about 10M bytes. The media is currently available only to

disk drive manufacturers who are developing compatible drives. About 10 major disk manufacturers are now developing products using Kodak media, according to William L. Kroon, director of marketing for the Magnetic Media Division of Kodak's Spin Physics unit. He said the disks will be available with the first commercially available disk drives using vertical recording technology.

Isomax disks currently cost between \$10 and \$20 each in quantities of 1,000. Disks designed for horizontal recording cost about \$6

(Continued on Page 60)

For Graphics Applications

B-Size Eight-Pen Plotter Unveiled

DANBURY, Conn. — IBM Instruments, Inc. has unwrapped a B-size eight-pen digital plotter that can be used to produce color charts for both technical and presentation graphics applications. The printer can output color business graphics from the company's 5920 Model 2, which was introduced recently at the National Computer Conference.

Under microprocessor control, the XY/749 plotter can create circles and arcs, axes and point-marks as well as the Ascii 96-char. set. All of these characters can be written at any angle with users having control of height, width and slant. The company contends this greatly

simplifies user programming.

Because the XY/749 is command-set compatible with the company's XY/750 plotter, existing software can be used without modification, the company said.

In addition to plotting, the XY/749 can be set to monitor data streams, operate as a line printer and execute a test program which lists interface parameters.

The unit's RS-232C and IEEE-488 interfaces permit it to be used with most mainframes, mini and personal computers. The device can also be used with an 8-bit parallel bus, according to the company.

Available immediately, the

XY/749's price starts at \$1,995, according to the vendor, through P.O. Box 332, Danbury, Conn. 06810.

Columbia's 30-Lb Micro Claims IBM Compatability

COLUMBIA, Md. — A 16-bit microcomputer system promising full IBM compatibility in a portable package was introduced here by Columbia Data Products, Inc.

The Columbia VP weighs 30 lb. and offers both IBM hardware and software compatibility. It comes complete with business software, according to

the vendor. The VP offers 120/256K bytes of memory. Additional storage capacity is available in dual half-height 320K-byte floppy disk drives.

The VP also features one RS-232 port, a parallel printer port and a 9-in. monitor with graphics capability. Prices start at \$2,995, from the vendor at 8990 Rt. 108, Columbia, Md. 21045.

Fujitsu Releases 265K-Bit RAM Chip

By Ed Scannell
CW Staff

SANTA CLARA, Calif. — Fujitsu Microelectronics, Inc. has unwrapped what is believed to be the industry's first commercially available 256K-bit dynamic random-access memory (RAM) chip. The chip was shown recently at the National Computer Conference in Anaheim, Calif.

Fujitsu said it will eventually incorporate the chip into one of its 16-bit microcomputers via a

single plug-in board. It will reportedly allow users of the system to store up to 1M byte of RAM and up to 40M bytes of hard disk storage.

Scheduled for delivery sometime during this year's fourth quarter at a cost of \$2,495, the board is expected to have a dramatic impact on the company's future mainframe and multiuser microcomputers in terms of cost, performance and reliability, a spokesman said.

"The only way to get 1M byte into a system is to come up with a 256K-bit RAM," said Richard Kors, vice-president of Fujitsu's Professional Microsystems Division. Kors stated the chip will have significant advantages for the company's future products, particularly its multiuser systems. "As we go to multiuser systems that support say, four users, we can give each user a quarter of a megabyte," he said.

One day after Fujitsu's an-

nouncement, AT&T announced it would begin commercial production of a similar product this summer, which would be available "later this year," according to AT&T officials. Other companies reportedly working on 256K-bit RAM chips are Hitachi Ltd. and Oki Electric Industry Co.

More information about the Fujitsu RAM chip can be obtained by contacting the vendor at 3320 Scott Blvd., Santa Clara, Calif. 95051.

Combines Merits of 3262, 3211

IBM Unwraps 4245 Band Printer

PORT CHESTER, N.Y. — Combining some of the attributes of its 3262 and 3211 line printers, IBM has unwrapped a 2,000 line/min band printer which the company said allows users to upgrade to the 3203 series Models 4 and 5.

Compatible with the 4300, 3031 and virtual storage 370 processors, the 4245 Model 1 band printer has 132 print positions at 10 char./in., prints six to eight line/in. under program control and handles most forms used on other IBM line printers in-

cluding card stock and six-part forms, the company said.

The impact device accepts form sizes ranging from 3½- to 22-in. wide and from 3- to 24-in. long, a spokesman noted. However, for forms longer than 14 inches, users need the rear stacker enclosure left open. Forms longer than 17 inches also require the front forms compartment door to be left open, according to the firm.

The 4245 prints 2,000 line/min using a 48 char. print band, 1820 line/min

using a 52-char. band, and 820 line/min using a band with 124 characters. Replacement or additional bands for commercial and scientific applications and international languages are available through IBM's Systems Supplies Division.

The 4245 is expected to be available in July and costs \$63,500. Three-, four- and five-year term leases starting at \$1,238/mo are available through the IBM Credit Corp., the vendor said from 900 King St., Port Chester, N.Y. 10573.

Kodak's Isomax Floppy Boasts Vertical and Horizontal Formats

(Continued from Page 59)

The disks employ an isotropic cobalt-enhanced magnetic particle, which can reportedly record data at a variety of angles, ranging from the conventional horizontal format up to a vertical, or perpendicular, format. Users can mix recording densi-

ties on a single floppy. However, Isomax floppies are most cost-effective when used to record data in a vertical format, he explained.

To use the media, disk drives must be equipped with a specialized recording head. Conventional disk drives have a 50-micron gap between the recording head

and media. Disk drives using the Isomax media must have a 20-micron gap between the recording head and media, Kroon said.

Isomax floppy disks are expected to cost about 20% more than disks designed to record in a horizontal format. Kroon, however, noted that users will be able to pack about 10 times more data, or about 40,000 bit/in., onto an Isomax floppy using a vertical recording format.

When available commercially at the end of 1983, the disks will be guaranteed for two years, or about five million passes, according to Kroon.

Kodak is located at 343 State St., Rochester, N.Y. 14650.

Vendors at NCC Unveil Score of Memory Products

(Continued from Page 59)

In addition, the firm announced a series of 5¼-in. disk drives that feature an average positioning time of 25 msec and are offered in 29.1M-, 50.9M- and 80M-byte capacities. Fujitsu America is located at 3075 Oakmead Village Drive, Building 3, Santa Clara, Calif. 95051.

Other media introductions include: streaming tape drive products from Tandberg Data, Inc., the Mark II and Mini-Mark II ¼-in. drives. The units are available in four-track versions with 20M- and 27M-byte formatted capacities and in nine-track 40M- and 60M-byte formatted capacities. Both drives can be factory ordered to operate at either 45 or 90 in./sec.

The Mini-Mark II costs \$1,500 for the four-track model and \$1,575 for the nine-track model. The Mark

II costs \$1,525 for the four-track model and \$1,750 for the nine-track model, the vendor said.

The vendor is located at 16643 Valley View Ave., Cerritos, Calif. 90701.

Harris Cuts Prices On 9200 Family of Systems

DALLAS — Harris Corp. has announced price reductions on its 9200 family of interactive IBM 3270-like communications systems.

The price cuts include a 15% reduction in list purchase prices and quantity purchase discounts up to 40% for most 9200 system

components, the vendor said. For example, the Harris 9279 base color terminal is now down to \$2,950 from \$3,595.

Further details are available through Harris headquarters at 16001 Dallas Pkwy., P.O. Box 400010, Dallas, Texas 75240.

DECsystem-10/20 Users...



Mainframe Modeling at a Micro Price

- BBL II+ is a true decision support language, not a spreadsheet package
- Self-documenting models that look and read like English
- Easy to learn and use, yet incredibly powerful

- Delivered with superior documentation — installs in minutes
- BBL II+ "Starter Kits" cost just \$95, including complete BBL II+ documentation, the BBL II+ application library and a 90-day trial copy of the BBL II+ system

If you own or use any standard DECsystem-10 or DECsystem-20, you can finally get the mainframe modeling system you need, at a price you can afford... just \$2950! Prove it for yourself with a BBL II+ "Starter Kit". Call or write today for complete details.

BBL II+ Available Now... Just \$2950⁰⁰

DECsystem-10 & DECsystem-20 are trademarks of Digital Equipment Corporation

BBL II+

Core & Code, Inc.
3 Winding River Circle, Wellesley, MA 02181
(617) 237-4554

User Perfect.

If you want to know who consistently makes the very best word processors, ask the people who use Philips. You'll find the proof in the two major independent surveys of word processing users.

Of all the word processors rated in the Advanced Office Concepts® survey, Philips placed first overall in 1981 and 1982.

Advanced Office Concepts is a registered trademark of Advanced Office Concepts Corporation. Datapro is a registered trademark of Datapro Research Corporation.

ASK ANYONE WHO HAS ONE.

PHILIPS



For five consecutive years, Philips has been selected to the esteemed Datapro® User Survey Honor Roll.

If you want to join the satisfied users, call Philips today at 1-800-828-6211 (1-800-462-6432 in New York State) and we'll send you free copies of the reports.

**PHILIPS
INFORMATION
SYSTEMS**

For CICS/DOS/VS(E) Inter-Partition Command Processor (IPCP)

IPCP opens and closes CICS files from batch partitions with a single execute statement.

- enable/disable transactions
- and many other CSMT functions
- eliminate PAUSE statements
- keep CICS up 24 hours
- free 30 day evaluation period
- \$950 one time or \$48/month

J. W. LAMPI, INC.
6190 Benjamin St. NE
Minneapolis, MN 55432
(612) 571-3934

Lack of Standards Cited

Graphics Yet to Make Corporate Splash: Survey

By Jim Bartimo

CW Staff

ANAHEIM, Calif. —

Computer graphics have not yet made a big splash in large corporations, a random survey of attendees at the recent National Computer Conference has shown.

However, those who have tested the waters have high praise for their systems.

One major reason why some attendees have not yet bought into graphics is a lack of standards.

Mixed Reactions

"We haven't gotten into graphics yet, partly because of the lack of standards," said Robert Fischer, an engineer for NCR Corp. "They're starting to come out with some graphics standards now, so we'll be getting into graphics soon."

Other attendees said that computer graphics were too expensive or not important enough on which to spend company dollars.

"We would be using business graphics if we bought any kind of graphics," said one representative from a Canadian manufacturing company, "but we don't really need it. Business graphics aren't like CAD/CAM [computer-aided design and manufacturing] systems where the engineers really need it."

One engineer who agreed that computer graphics is a must for his profession was found lingering around the California Computer Products, Inc. booth. "Graphics has improved my business by several orders of magnitude," said R.J. Price, vice-president of information systems for Peabody Coal Co. of St. Louis, Mo.

"We use a combination of packages to create our own

mapping system to show where the coal is," he said. "It allows us to find and produce coal more efficiently."

"You typically have engineers drawing maps by hand," Price continued. "That's slow and doesn't give the engineer any interaction to make corrections."

While many engineers are finding graphics indispens-

able, some offices are experimenting with them for the first time.

"From where I am, I see a lot of end users using graphics," said Richard Witt, project administrator for office automation at the local Rockwell International Corp. office. "We use a lot of graphics to produce technical manuals," Witt continued.

"Computer graphics allow us to make changes closer to our deadlines and make the manuals more accurate."

In one of Xerox Corp.'s data processing shops, graphics have become popular with at least one programmer. "We use graphics for flow charting and memo design," Luis Ashelford said. "They're especially useful

when combined with text," he said.

One president of a computer consulting firm plans to make use of graphics on his IBM Personal Computer. "I want to use my micro to do some of the things I've been doing on a mainframe," the consultant said. "I'm not hoping it can be done — I'm expecting it."

Why two when one will do?



Lee Data's universal terminal system design provides access to both 3270 and VT100 applications.

Now with Lee Data's new 3270/Async Communication System (Series 400) you can eliminate the cost and inconvenience of needing separate displays for access to 3270 and VT100 applications.

The Lee Data universal terminal system approach is another innovative Lee Data design that allows a single Lee Data display to access applications and data from an IBM CPU, a non-IBM system such as DEC, H-P or Prime, and timesharing services. And a simple command entered from the display keyboard is all that is required to switch from 3270 to VT100 operating mode and back again. What could be easier?

The Series 400 System incorporates a new hybrid approach to system operation that is simpler and more efficient than

protocol conversion. This approach allows a Lee Data controller to provide dedicated 3270 and VT100 processors for concurrent, but independent application access.

In addition, a single Lee Data controller provides you 3270 compatibility via either a remote BSC or SNA/SDLC or a local SNA or non-SNA interface, as well as 1 to 16 RS232C ports for your asynchronous application needs. Line speeds available are from 300 to 19,200 BPS.

The Series 400 System also provides you support for up to 32 devices, including Lee Data's unique All-In-One display that offers dynamic selection of 4 screen sizes—three 80-column and one 132-column. Lee Data's 3279-compatible color displays and a full line of printers are

also available as part of the 32-device complement.

3270 and VT100 capabilities combined in a single terminal system—a reality with the new 3270-plus-Async system from Lee Data.

Discover what our system can do for your company's terminal network. Call our system specialists toll free:

800/328-3998.

Designers of innovative systems for the information worker

LEE DATA CORPORATION
7075 Flying Cloud Drive
Minneapolis, MN 55344

THE COMPLETE BRANCH OFFICE

- ☒ Luxuriously furnished
- ☒ Completely staffed
- ☒ Fully equipped
- ☒ Prestigious address
- ☒ Short term agreement
- ☒ No capital investment

All included when you lease from OmniOffices.

Atlanta (404) 256-0009	Houston (713) 965-0060
Chicago (312) 843-2500	New York (212) 867-5750
Dallas (214) 233-6664	San Francisco (415) 391-8810
Denver (303) 770-1000	Washington, D.C. (703) 821-8950

Or write for brochure:
S. Wilson, Leasing Manager
OmniOffices, Inc.
5775-E Peachtree Dunwoody Rd., NE
Atlanta, GA 30342

OMNIOFFICES

How to get the most popular features of the VT100 for 30% less.

VT100
(With extra-cost Advanced Video and printer port options installed.)

- 
1. Display 80 or 132 columns, 24 lines deep
 2. Smooth scrolling and split-screen viewing
 3. Blinking, bold and reverse characters with underlining
 4. Double-height and double-width characters
 5. Reverse screen
 6. Built-in space and extra power for additional options

Buy Digital's VT 102.

VT102
(All features standard at no extra cost.)

- 
1. Display 80 or 132 columns, 24 lines deep
 2. Smooth scrolling and split-screen viewing
 3. Blinking, bold and reverse characters with underlining
 4. Double-height and double-width characters
 5. Reverse screen
 6. Five full- and half-duplex protocols

Surprise. Digital's VT102 terminal has all the features and quality that have made the VT100 the industry standard. So what's the difference? The VT102 is designed for people who don't need the extra space or power for expansion and add-ons, which include the graphics and personal computing options. And not getting that expansion capability can save you over 30% on the price. So if you don't need it, why pay for it? Check out the VT102 instead.

© Digital Equipment Corporation 1983

See your Digital distributor today or call 1-800-DIGITAL, extension 700. In Canada, call 1-800-267-5250. Or write:
Digital Equipment Corporation,
Terminals Product Group, 2 Mt. Royal
Avenue, UPO1-5, Marlboro, MA 01752.

digital

Gets Low Grade in Software Integration **Lisa Rated High in Price/Performance**

By Jim Bartimo
CW Staff

CHERRY HILL, N.J. — Management Information Corp. (MIC) has released an evaluation of Apple Computers, Inc.'s Lisa that compares it with other office workstations and rates it high in price/performance, but low in other areas.

Other workstations and personal computers with workstation capabilities evaluated in the report, entitled "The Apple Lisa," were the Xerox Corp. Star, the IBM Personal Computer XT and the Digital Equipment Corp. Professional 350. "One of the biggest complaints from Lisa's critics," according to the report, "is that compared with its competition, Lisa is overpriced."

"But people forget that Lisa is a multi-task, single-user personal computer that comes bundled — the IBM and DEC are unbundled systems with additional hardware and software costs running between \$3,000 and \$8,000," the MIC report continued.

Lisa's basic configuration includes a 12-in. black-on-white bit mapped terminal, a mouse cursor control, a Motorola, Inc. 68000 processor, 1M byte of main memory, 5M bytes of hard disk memory, two 5¼-in. floppy disks of 860K bytes each, Apple's operating system and six application packages.

The Star, priced \$4,000 more at \$14,000, includes the Xerox 8000 NS processor, 192K bytes of memory, a 12-in. display, a mouse, keyboard, eight application programs, two 5¼-in. floppy diskettes of 600K bytes each, the Xerox Politi operating system and one 10M-byte hard disk, according to the report.

"Like the Lisa, the Xerox has no memory expansion capabilities," the report said. "Lisa, ironically, is an offshoot of the Xerox Star, but is less expensive," the MIC report continued.

In price/performance evaluation, the Lisa holds its own against the Professional 350 and Personal Computer XT personal computers, the report claimed. A DEC computer configured to equal the Lisa would cost about \$1,400, according to the report.

An IBM Personal Computer XT, which currently lacks the proper software, could not be configured to equal the Lisa at this time, but it does cost less, the report maintained.

While the Lisa received high grades in many areas, it did not receive a totally positive review. For instance, not all of Lisa's software packages can be integrated with each other. The data base program, Lisalist, currently cannot be integrated into any other Lisa package, MIC found, but most Lisa programs can interact with each other.

Another area in which Lisa received criticism was response time. "While Lisa does respond well to activities, its re-

	APPLE COMPUTER, INC. LISA	XEROX CORP. STAR	IBM PERSONAL COMPUTER XT	DIGITAL EQUIPMENT CORP. 350
Processor	Motorola, Inc. 68000	Xerox 8000 NS	Intel Corp. 8080	LSI-11/23
Memory	1M byte	192K bytes	640K bytes	256K bytes
Operating System	Apple	Politi	PC DOS	P/OS
Screen Display	40 by 132	40 by 132	25 by 40 25 by 80	24 by 80 24 by 132
Keyboard?	Yes	Yes	Yes	Yes
Mouse?	Yes	Yes	No	No
Local-Area Network Capabilities*	Appletalk; Ethernet	Ethernet	None	Ethernet; Decnet
Floppy Disks	2K by 860K bytes	2K by 600K bytes	One 360K bytes	2K by 400K bytes
Hard Disks	5M bytes	10M bytes	10M bytes	5M bytes
Software	Lisawrite; Lisacalc; Lisagraph; Lisalist; Lisadraw; Lisaproject	Text Editing; Equations; Graphics; Advanced Graphics Fields; Spelling Checker; Electronic Mail; Information Re- trieval/Records Processing	Dbase-II; Visicalc; Wordstar; Visiplot	Basic; Visicalc; Visitrend; NPL; TMS
Total Hardware Price	Bundled	Bundled	\$7,660	\$10,131
Total Software Price	Bundled	Bundled	\$1,690	\$ 4,195
Total System Price	\$9,995	\$14,000	\$9,260	\$14,326

*This configuration indicates what the manufacturers have set up as a basic system and does not reflect on third-party vendors. (Not included in price.)

Source: MIC

Apple's Lisa Compared With Similarly Configured Competitors

sponse time between the screen and the operating system is quite slow," the report said.

For instance, response times as slow as 45 seconds have been reported by Apple in the Lisa project program, according to the report.

Finally, the report said that Lisa does

not add much to current word processing and spreadsheet technologies, although it does improve a manager's capability to produce graphics for planning.

The report is priced at \$35, and information is available from MIC, which is located at 140 Barclay Center, Cherry Hill, N.J. 08034.

Personal Computers Seen Center Of Office of the Future at NCC

By Katherine Hafner

CW Staff

ANAHEIM, Calif. — The personal computer is the workstation of the future, but only by default. And by the very existence of the personal computer, the nature of the office is in a state of revolution.

So maintained panel members who spoke recently at a National Computer Conference session on personal computers in the office.

"Personal computers are low-cost and easy to use," Alexandra Corson, a researcher with International Data Corp. based in Framingham, Mass., said. "The problems of integrating word processing with data processing allows a slot for the personal computer."

A year ago, no one had any idea what the impact of the personal computer would be, Corson said. It has since emerged as the "winner hands-down in the gunfight at the OA corral," she said.

In 1982, Corson said, U.S. manufacturers shipped 2,650,000 desktop computers. By 1987, she projected, that number will rise to nearly 15 million.

But Corson tempered her enthusiasm for personal computers. "Unless you buy an IBM or similar [personal computer], you'll have to be prepared to bite the bullet," she said. "Your first [personal computers] are likely to be throwaway items."

Corson also urged her audience to focus on individual needs when investing in personal computers. Personal computers render their user generally self-sufficient, which is causing a "dramatic turning inside out and upside down of the central world of DP," she said.

"The whole nature of information is changing," she said. "Systems will become more integrated, but who is going to manage these integrated systems?"

Corson's sentiments were echoed by Mike Gamroth, an agricultural extension agent in Oregon who is in the process of introducing microcomputers into his office. "Personal computers don't have to run your business or your life, but they can be an important tool for you," he said.

MAI Extends OMS for Basic Four

TUSTIN, Calif. — Management Assistance, Inc. (MAI) has enhanced its Office Management System (OMS) software for its Basic Four minicomputer systems with the addition of a personal calendar, automatic meeting scheduler, spelling verifier and bulletin board.

The scheduler sets up meetings among any number of people in the organization by checking users' computerized calendars for meeting time conflicts, a spokes-

man said. The spelling verification program has been expanded to check spelling in messages, bulletin board entries and word processing documents, the spokesman added.

The software is available for a starting price of \$17,000.

Additional information can be obtained from MAI, Basic Four Information Systems Division, P.O. Box C-11921, Santa Ana, Calif. 92711.



DATA GENERAL INTRODUCES THE OFFICE AUTOMATION SYSTEM INGENUOUSLY POSITIONED BETWEEN THE OVERPRICED AND THE OVERPROMISED.

Until now you've had two choices for automating a large office. A system from the company that seems to feel price is no object. Or a system from the company that promises complete systems which turn out not to be complete.

Now Data General offers the office automation system that doesn't force you to choose between compromises.

The CEO™ Comprehensive Electronic Office system based on the industry's newest and most powerful 32-bit processor—the Data General ECLIPSE® MV/10000. It provides the power and performance of a mainframe at less than one third the price. And can bring down the cost of automating large organizations to under \$7500 a workstation.

Our systems also protect your investment. Because they're compatible with both the mainframe world and the word processing world. (We provide SNA and X.25 communications, and an interface with most Wang word processing.) Which means you won't undermine your previous investment in either world for the sake of true, integrated office automation.

And CEO systems enjoy another advantage worth considering in an industry that's been more timely with

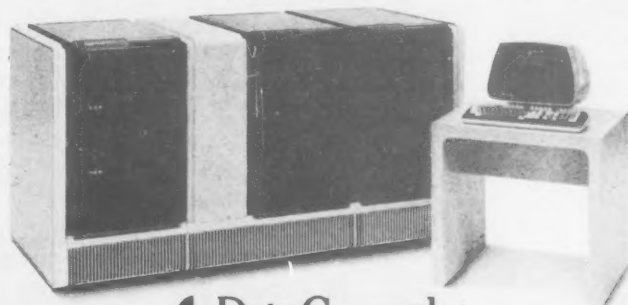
new product announcements than with the new products themselves. Our systems exist, they're backed by a worldwide service and support network already in place, and they're available now.

All of which gives you two things you've been denied up until now:

A reasonable price.

And reason to believe you'll get what you've been promised.

For more information on the complete line of Data General office automation systems, write to Data General, CEO 30, 4400 Computer Dr., Westboro, MA 01580.



 Data General



Telenet.

Nobody's data network is easier to reach.

GTE Telenet, world's first packet-switched common carrier...
Just a local phone call from hundreds of American cities, in
all 50 states, plus 40 foreign countries...

And able to handle virtually any host language, terminal
speed, protocol or code conversion.

To reach our network, all it takes is either an X.25 software pack-
age or our on-site microprocessor-based interface equipment.

And, of course, a telephone.

You can count on the system's reliability. With its built-in re-
dundancy, it not only senses when a node is out of action, but
also routes data around the fault, automatically.

Finally, this whole network is available at a cost of just pen-
nies a minute, plus a monthly charge for computer access.
There's no capital investment.

For more on how easy our network is to reach, reach for
your phone and call, toll-free, 800-835-3638. GTE Telenet,
8229 Boone Blvd., Vienna, VA 22180.

GTE Telenet



Agreement in Principle Reached Martin Marietta to Purchase Mathematica

By Bill Laberis

CW Staff

BETHESDA, Md. — Martin Marietta Corp. has penned an agreement in principle to purchase Mathematica, Inc., the Princeton, N.J.-based data base and software services company, for \$30.8 million in cash and securities.

The agreement needs the approval of the shareholders of both firms and should be finalized by mid-summer, a Mathematica spokesman said. Thereafter, Mathematica will operate as a fully owned unit of Martin Marietta's Data Systems group, a \$250 million per year division of the parent corporation. Mathematica's shareholders will receive \$27 per share for their holdings, about \$4 per share more than what Mathematica traded for prior to the acquisition announcement.

For Mathematica, the acquisition by the diversified giant will mean, among other things, an infusion of capital needed to

The software business "is becoming extremely capital intensive," making acquisitions of independent software companies by more cash-rich companies a viable alternative to funding research and development — Tibor Fabian, president of Mathematica, Inc.

support increasingly more expensive product development, according to Tibor Fabian, Mathematica's president.

In an interview last week, Fabian said the software business "is becoming extremely capital intensive," making acquisitions of independent software companies by more cash-rich companies a viable alternative to funding research and development.

If approved, the acquisition will be the

second such deal involving a major independent software vendor in recent months. In March, Dun & Bradstreet Co. paid \$50 million to acquire McCormack & Dodge Corp., a deal similarly motivated by McCormack's growing need for research and development funds [CW, March 28].

"We are also living in a time of shortening product cycles, making our research projects all the more important," Fabian said. "Certainly, Martin Marietta's financial strength was a key component of our desire to become a part of them."

Beyond the purely financial stimuli of the acquisition, Fabian noted that Martin Marietta is an extensive user of Ramis, Mathematica's family of data base management products and a fourth-generation language. In the past, Martin Marietta has made Ramis available to its time-sharing customers, "And now they will give us increased assistance in marketing current and future versions of the products."

"I know Martin Marietta is looking forward to creating Ramis applications," Fabian continued. "At the point it does so, investment in marketing will become quite important. Clearly, more and more investment will be required to maintain prominence of product."

Another aspect of both Martin Marietta's and Mathematica's operations that figured into the acquisition agreement is the volume of business each conducts with the

(Continued on Page 70)

IBM Suing Former Employee For Tech Theft, Business Venture

By Jeffrey Beeler

CW West Coast Bureau

SAN JOSE, Calif. — IBM has sued one of its former employees for allegedly stealing the firm's thin-film media technology and then using the proprietary know-how to go into business for himself.

Filed on May 11 in Santa Clara County Superior Court, the suit accuses Dr. Yeong S. Lin of secretly forming Lin Data Corp. with the help of confidential technology he misappropriated while he still worked for IBM.

Lin Data, which would have competed directly with IBM in the thin-film disk arena, was incorporated on March 8, one day before Lin resigned from IBM to go his own way, the suit alleges.

In its complaint, IBM also accuses Lin of disclosing the company's trade secrets when he prepared Lin Data's first detailed business plan, which formally proposed the company's creation and outlined its objectives.

The plan, which Lin is alleged to have shown to IBMers and non-IBMers alike, is said to have contained a wealth of highly sensitive information describing IBM's thin-film media technology and market-

ing ideas. Among the compromised information were top-secret details concerning:

- A thin-film media production process that reportedly bears a striking similarity to IBM's.

(Continued on Page 70)

DG Division Restructured, Looks To Improve Customer Support

By Ed Scannell

CW Staff

ANAHEIM, Calif. — With the restructuring of its General Systems Division now complete, Data General Corp. is hoping to deliver better service to its customers, particularly those in the industrial automation segment of the market.

The restructuring will also make the company better able to anticipate marketing trends and therefore provide better service, especially for those in the same market area, while enabling DG to get a firmer grasp on marketing trends, said John Crawford, vice-president and general manager of DG's General Systems Divi-

sion, during an interview conducted at the National Computer Conference here this month.

"The way we have it organized now, there is a product marketing group, a market planning group and a business planning group within each of our groups," Crawford said. "This will not only allow us to respond to marketing opportunities faster, but enable us to look forward and determine where the market is going. We can begin to anticipate what the market's requirements are, rather than having to react to its requirements," Crawford explained.

(Continued on Page 74)

Maguire Says Software AG Is Back on Track

By Bill Laberis

CW Staff

ANAHEIM, Calif. — Fourteen months ago, John Norris Maguire found himself wrestling for control of his company's expenses, which were clearly out of hand and consuming the lofty profits Software AG had enjoyed for several years.

Sales of the company's data base products and programmer aids had been growing steadily, rising from \$19 million in fiscal 1981 to nearly \$25 million in fiscal 1982. But expenses skyrocketed from \$14.5 million to \$23.6 million in this time, prompting both the company's chief financial officer and executive vice-president to resign and Maguire to reassume the company's line responsibilities.

From most indications, Maguire's efforts since those dark days a year ago have

begun to pay off. Software AG has posted modest earnings gains from operations in each of the last three quarters after posting its first loss ever last May. The \$250,000 loss reported in the most recent quarter was attributable to a \$1 million-plus cash settlement made to finalize a lawsuit brought against the company.

Moreover, Maguire said he believes that certain trends in the software market bode well for Software AG's product offerings, trends he claimed he foresaw "two decades ago."

In an interview at the National Computer Conference this month, Maguire said the most ardent task he faced in his financial housecleaning involved extricating the company from the consulting business in which it was so deeply mired.

(Continued on Page 75)



John Maguire

APPLIED TECHNOLOGY ASSOCIATES, INC.
Proudly announces public presentations of our popular courses in the Washington, DC area

CICS/VS COMMAND LEVEL

(\$650 individual, \$575 each for group of three or more)

July 11-15, 1983

September 12-16, 1983

INTRODUCTION TO SAS®

(\$325 individual, \$275 each for group of three or more)

July 13-15, 1983

September 14-16, 1983

ATA • 1710 Goodridge Drive • Suite 1418 • McLean, VA • (703) 442-9030
SAS is the registered trademark of the SAS Institute, Inc., Cary, NC

Tandem Chief Rates Creativity, Skilled Workers Keys to Success

By Robert Batt

CW West Coast Bureau
ANAHEIM, Calif. — The quality of skilled employees, rather than manufacturing costs, will determine which companies are successful in the nonstop transaction processing market, according to James Treybig, president of Tandem Computers, Inc.

In an interview at the Na-

tional Computer Conference here recently, Treybig stressed creativity rather than management control as the critical ingredient in building a successful enterprise.

"A company needs to emphasize creativity and reward it. The key to success in the computer business is how you attract and motivate

people. This is where productivity comes from, rather than simply controlling manufacturing costs," he claimed.

Companies must be willing to accept failure, communicate effectively and tolerate the differences between people. "If you want creativity you must be willing to tolerate some confusion," he said.

However, most companies, he observed, are not set up this way, as it is far easier to put in a lot of structures and controls.

On the other hand, he warned that it is possible to go overboard in favor of creativity at the expense of management controls, and he admitted Tandem had experienced some problems in this area.

"The problem is when you grow fast, you do some things really well, and in other areas, nothing is done, so that you have gaps. Our job now is to fill those gaps," he said.

During 1982, the company saw its sales growth dip to an annual rate of 50%, down from the 90% annual growth it had enjoyed for several years.

Year-end results had to be revised due to internal auditing irregularities, and the company has since instituted a series of management and financial controls to centralize the control of manufacturing, product management and international marketing, he said.

"We could have done some things a little better," Treybig said, while maintaining that the company was not wedded to any particular growth rate. Profit, a good place to work and happy customers all came before growth, he said.

"Growth creates opportunities and attracts good people, but as far as I am concerned, I will be happy if we grow at 40% providing we are doing a good job," he claimed.

It will take nine months to a year before the company will know if its organizational changes have paid off, Treybig said. He expects fluctuations in the company's quarterly results for some time to come, although he claimed the underlying trend for Tandem will be solid.

For the first six months of Tandem's current fiscal year ending March 31, revenue increased 31% to \$190.1 million, up from \$145 million, with net income of \$13.5 million compared with \$14 million for the same period last year.

When just backing up a file has you down, the Westinghouse Disk Utility System can save you.

You don't have to swim through miles of manuals and instructions to back up a file quickly and easily. Let the Westinghouse Disk Utility System help you breathe easier.

The Disk Utility System provides comprehensive capabilities for reliable backup/restore/copy on all IBM 4300, 3030, 370 or other compatible units running in a DOS/VS(E) or DOS compatible environment. And it does it fast.

It's flexible, too. It can restore any file selectively or restore a full volume. It can relocate files, delete expired files or reorganize files. It even offers portability across

device and architecture boundaries: from CKD to FBA and vice versa.

The result. You can manage your complete data files and libraries quickly and easily. And with full data integrity protection and operations security.

If a simple job is putting you under for the third time, don't let it happen again.

Call us about the Westinghouse Disk Utility System. Westinghouse Electric Corporation, Operating Software Products, (412) 636-3100. For information, write us at 2040 Ardmore Blvd., Pittsburgh, PA 15221.



Interviewed at NCC

Vendors See Economy on Upswing

By Bill Laberis
CW Staff

ANAHEIM, Calif. — All indications point to a sustained economic recovery, during which users will employ the hard lessons learned during a prolonged recession.

This was the dominant view distilled from random interviews with 10 vendors' representatives at the National Computer Conference held here earlier this month.

As could be expected, all the representatives said they have a more optimistic view of the U.S. economy now compared with 12 months ago, and all but one agreed the recovery will be sustained.

Importance of Attitude

However, a majority of those polled listed attitude as the key ingredient of recovery, ranking it above lower interest rates as the driving force behind sustained growth. It was generally felt that a leading indicator of recovery in the computer industry is the accelerating rate of employee hiring, particularly in the sales and marketing areas.

"There's a lot of subtle recruiting going on here at the show like I've never seen before," said Lee Clifford, director of marketing services at Beehive International of Salt Lake City, Utah.

Bill Vinson, Western sales manager for the Telera Division of Research, Inc. in Mill Valley, Calif., said the recovery has outpaced his expectations of a year ago. Vendors have been particularly active in terms of new product development, signaling their optimism.

"Users," Vinson said, "are going to be much more cautious in their dealings with the vendors. They have learned to act more efficiently, so we'll have to work a bit harder to put our products across."

Vinson said users will employ their heightened market awareness to discriminate more carefully among vendors' products. He added that the recession has also attuned users to dealing with the rapid pace of technological change, making them generally more hesitant in making mass purchase decisions.

David Meis, vice-president of Compunex Data Systems, an IBM-compatible terminal distributor in Irvine, Calif., said users and vendors alike believe the current upturn "is not a short-term thing, but something that just might lead to a long period of real growth."

Users who postponed pur-

chase decisions due to relatively high interest rates a year or more ago are beginning to place orders again. Both Meis and Telera's Vinson speculated that a significant portion of their companies' recent orders have been derived from pent-up user demand.

Anthony Barbarino, terminal project leader at Memtec Corp. of Salem, N.H., said

the computer industry today "is characterized by an aura of optimism. There's a lot of new design taking place, which is very encouraging."

But Barbarino disagreed with other interviewees on whether the lessons of the recession will be remembered.

"Mistakes are always repeatable, no matter how hard the lessons came," he said.

TIRED OF TELLING THE PLANT ENGINEER "WAIT UNTIL NEXT YEAR"?

GIVE HIM...

MODCAM II (Modern Management's Computerized Maintenance Management) Software System. It is:

- Ready NOW
- Easy to operate
- Extensively documented
- Surprisingly cost effective
- Compatible with a variety of computers

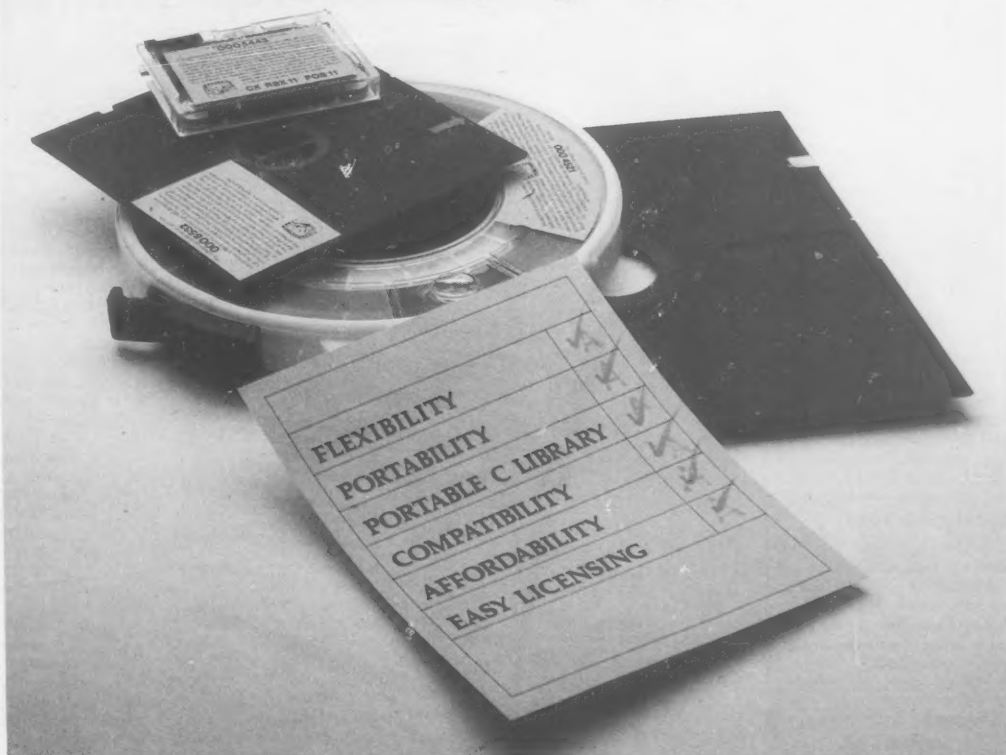
If your Plant Engineer wants a maintenance program NOW... MODCAM II software system performs work order tracking, inventory control, equipment history, preventive maintenance tracking and much more. Call or write:

MODERN MANAGEMENT, INC. 6401 Carmel Rd.
Charlotte, NC 28211 (704) 542-6546

© 1983 Modern Management, Inc.



Compilers From Whitesmiths, Ltd. Are Earning Top Grades.



For users of PDP-11, VAX, MC68000, 8080, or 8086 CPUs, Whitesmiths' C Compilers are quite a step above average.

The compilers offer a wide range of desirable features. Like dependable and proven code. Flexibility. Ease of use. Portability. An incredible number of cross support options (now including support for the DEC and IBM PCs). An extensive portable library, with a new set of UNIX-

style functions to aid migration. And, of course, our optional Pascal Translator as well.

With our compilers, you get all this plus affordability. Prices start as low as \$550 for C Native Compilers, \$1100 for Cross Compilers. Pascal plus C Native Compilers cost \$700, Pascal plus C Cross Compilers cost \$1400. And our new "licensing under copyright" eliminates end-user licenses, thereby

lowering OEM costs and simplifying software distribution.

When it comes to Whitesmiths' compilers we are sure you'll agree: we are crafting software that is in a class by itself.

To find out how you can make our compilers work for you, write



Whitesmiths, Ltd.,
97 Lowell Road, Concord,
MA 01742. Or call (617)
369-8499, Telex 951708
SOFTWARE CNCM

Whitesmiths, Ltd.

Software Craftsmen

UNIX is a trademark of Bell Laboratories. PDP-11 and VAX are trademarks of Digital Equipment Corporation. MC68000 is a trademark of Motorola Inc. Distributors: Australia: Ferranti Pty Ltd., P.O. Box 251, St. Leonards, NSW 2220 (612) 570-6100; Japan: Advanced Data Controls Corp., Chiyoda-ku, Tokyo 100 (03) 265-0585; United Kingdom: Real Time Systems, Newcastle upon Tyne NE52 7SS1

IBM Names Ex-Employee in Tech Theft Suit

(Continued from Page 67)

- The exact composition of the firm's high-density disks.

- IBM's manufacturing plans, including precise estimates of the costs and capital equipment that would be required to produce thin-film media in large volumes.

- The company's product strategy and implementation plans as they relate to high-density disks.

Dissemination of the Lin Data business plan consti-

tutes a breach of Lin's signed agreement with IBM not to reveal any of the company's technological or managerial trade secrets, the IBM suit alleges.

Lin's reaction to the charges against him were not immediately known. Efforts to reach him by phone at his Monte Sereno, Calif., home were unsuccessful.

In addition to Lin and his newly formed company,

IBM's complaint seeks legal action against a non-IBM named John R. Wilson. Together, the defendants "embarked on a deliberate course of illegal conduct... with the purpose... of causing injury to IBM," the suit alleges.

To compensate IBM for those alleged wrongs, the complaint requests an unspecified sum of punitive damages. The suit also seeks

an injunction and a temporary restraining order requiring the defendants to return all their allegedly stolen IBM technology and barring them from further disclosing the trade secrets or developing disk-related products.

IBM's thin-film media technology forms the basis of advanced products like the Model 3380 direct-access storage device. Thin-film disk systems provide much

higher recording densities than ordinary particulate-media products and have the additional advantage of being compatible with selected low-cost substrates.

After much expensive research and development, IBM claims to have made significant technological breakthroughs relating both to the composition of thin-film disks and to the process by which they are created.

Mathematica Acquisition In Progress

(Continued from Page 67)

federal government. Mathematica derived about 45% of its \$32 million fiscal 1982 revenues from various civilian federal agencies, which supported much of the activities of Mathematica's Policy Research Group. And Martin Marietta is one of the country's largest defense contractors.

"I can't say that their government work was of much interest to us, but I do know that our work with the civilian agencies interested them," Fabian said. "The level of government work has been important to both companies."

Talks between the companies were initiated six weeks ago, after Mathematica had been approached by "a few other companies" that Fabian declined to name.

Fabian also said that the three groups that make up Mathematica — Products, Mathtech and Mathematica Policy Research — will remain intact when the acquisition is finalized.

Custom View Binders for software documentation plus diskette storage

Also available, fully customized in many styles, sizes and colors with imprinting and index tabs.

For more information, or the sales representative in your area, call toll-free 800-343-8820.

M+F Case Co.

PO Box 520, Pawtucket, RI 02860



To a world of chaos and confusion, rational approach to

Today, most organizations realize how critical it is to manage information effectively. After all, information is a key resource. So the choices you make today for data processing,

part, are incompatible.

It is a market characterized by chaos and confusion.

OPEN World—finally, an approach that makes sense.

Northern Telecom has introduced a rational approach to the planning and building of information management systems: the OPEN World®. It is based on the simple concept that all information can be handled in one integrated system. One system that will allow many makes and types of equipment and transmission highways to work together harmoniously. One system that will give you freedom to choose from many different suppliers. One system that will evolve to protect against obsolescence.

The OPEN World is a planning framework embodying these concepts, and a program for the introduction of products and features to enable you to plan and build optimum information systems, designed around the key common element—communications. We're backing the OPEN World with a research and development commitment of one billion dollars to be spent on R & D in the next five years on OPEN World systems, products and features.

The Five C's—five criteria to judge our approach. Or theirs.

There are five key criteria against which any information management system or component should be evaluated.

1. Continuity.

The system or equipment should be able

The OPEN World

A corporate commitment

Northern Telecom's commitment reflects the importance of information to the future of all organizations... to business, large or small, government, and others.

Information management is fraught with complexity... in technology... in the diversity of products... and in a bewildering array of suppliers.

It is in this environment that Northern Telecom brings "Open Protocol Enhanced Networks"—OPEN World—universal information management systems through communications.

Communications is the common denominator for effective information management.

OPEN World is intelligent systems that can evolve and grow to meet any communications requirement.

OPEN World is versatile, planned information management... communications products and a universal planning framework.

This is Northern Telecom's commitment to information management... OPEN World.

Walter F. Light
Chairman of the Board
and Chief Executive Officer
Northern Telecom Limited

Edmund B. Fitzgerald
President
Northern Telecom Limited

OPEN World: our commitment to information management systems that meet the Five C's—continuity, compatibility, congeniality, control and cost-effectiveness.

voice and data communications, word processing and image communications will determine, to a large extent, your future success.

But deciding on an information management system can be very complex.

Obsolescence is a constant concern. Because of the rapid pace of technology, today's innovation too often becomes yesterday's generation. To compound the problem, the needs of your organization are also constantly changing. How do you know what your requirements are going to be next year?

Also contributing to the complexity is the ever-growing number of suppliers offering a vast array of products and services. Products, which for the most



An example of continuity: we have evolved the telephone network to allow yesterday's equipment to work as effectively as today's.

*Trademark of Northern Telecom Limited.

ISX Dropped, Wescom 580 Discontinued Datapoint, Rockwell Drop Out of PBX Mart

ANAHEIM, Calif. — Datapoint Corp. and Rockwell International Corp. have dropped out of the increasingly competitive private branch exchange (PBX) marketplace. These announcements were made just a few days prior to the opening here of the annual National Computer Conference.

Datapoint is making the

change through the sale of its Communications Management Products Division to Teknekron Industries, an Incline Village, Nev.-based venture research firm. Datapoint will maintain an undisclosed equity position in its former division, which will be transformed into a new company by Teknekron, according to a spokesman.

Only three of the Datapoint ISX PBX models, first introduced in 1981, are reportedly installed. Harold O'Kelley, chairman and chief executive officer of Datapoint, said his firm will focus its attention on office automation and other business communications products.

The departure of the ISX leaves the firm's Arcnet as

the bulwark of its office communications systems. Arcnet is a local-area network designed to facilitate the use of Datapoint computer and terminal products.

Rockwell International is dropping its Wescom 580 digital PBX outright, although a spokesman said Rockwell will continue accepting orders for the system

until Sept. 30. All marketing activities will officially cease June 1.

Some 200 of the Wescom 580s are installed, and another 20 to 30 are on order.

AT&T Enters Bid to Build TAT-8 Cable

LONDON — AT&T tendered a bid here this month to build the world's first undersea communications cable utilizing optical fibers and laser-powered transmission.

The phone company's system would enable two fiber pairs to transmit 40,000 simultaneous phone calls — more than four times the number that can travel over TAT-7, the latest copper transatlantic cable, which will begin service next July.

AT&T was one of several bidders for the TAT-8 cable, which is expected to go into service by mid-1988. It is being financed by 28 North American and European communications companies at a cost of about \$300 million to \$450 million. It will run from multiple points in Canada and the northern U.S. to locations in England, France and/or Spain.

AT&T's SL Lightwave Submarine Cable System operates at an information rate of 280M bit/sec, which normally can accommodate only 4,000 voice channels. But capacity has been increased tenfold through use of speech processing.

Northern Telecom brings the first information management.



In the OPEN World, many different makes and types of equipment can work together.

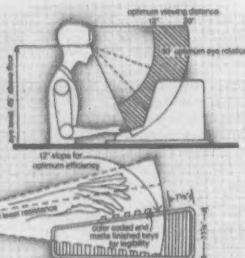
to evolve to meet future needs, to accommodate future technological developments, and to provide new features. Only in this way can it be "obsolescence-proof."

2. Compatibility.

Many makes and types of equipment must be able to work together as a harmonious whole. Components and systems from different manufacturers and transmission channels from different suppliers all must be compatible.

3. Congeniality.

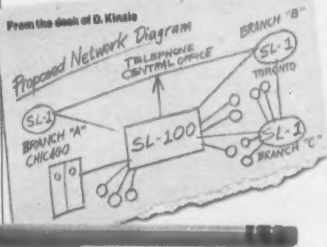
If people find equipment or systems intimidating, unattractive, or difficult to use, they simply won't use them. Even advanced technology should be attractive and simple to use.



4. Control.

You, not a supplier, should be in control of your information.

OPEN World systems are congenial—designed for ease of use and comfort.



In the OPEN World, you can control the design, building and operation of your system.

not lock you in to a single source or limit options in the future. And the system should also provide the tools to control the cost and flow of information in your organization.

5. Cost-effectiveness.

The bottom line. Long-term financial considerations, as well as initial cost, must be

considered.

All of the other four criteria—continuity, compatibility, congeniality and control—have a bearing on cost-effectiveness.

OPEN World—the Five C's plus commitment.

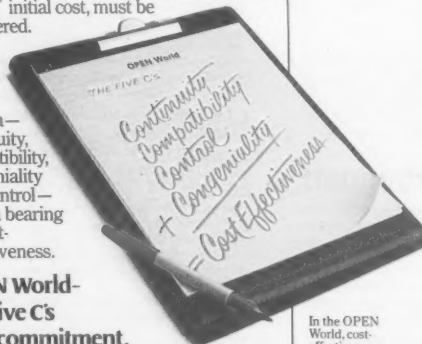
As the international leader in digital telecommunications, the technology that ties computers and communications together, Northern Telecom is in the unique position of being able to make the OPEN World a reality.

Our technological heritage allows us to meet the five criteria conclusively, as we have always done, for example, in providing equipment for the telephone network. When you place a long distance call, it may pass through many generations of equipment, all working smoothly together. Use of the telephone is simple, although much complex technology is involved. And the relative cost of using the telephone has steadily decreased, although its capabilities are constantly expanding.

In supplying telephone equipment for over 100 years, we've met all the criteria we propose for business communications.

If you'd like a brochure describing our commitments to each of these criteria, or more information about the OPEN World, write OPEN World, Northern Telecom Inc., 259 Cumberland Bend, Nashville, TN 37228.

In the OPEN World, cost-effectiveness is the bottom line.



In the OPEN World, cost-effectiveness is the bottom line.

nt northern telecom

management system. The system should
OPEN World. For information management, it's the best of all possible worlds.

SPF/PC™

NO IBM computer, large or small, is complete without SPF. The IBM/PC is no exception. SPF/PC, a full-screen editor with integrated utilities, is the answer for the PC.

It looks and works like IBM's large system editor ISPF.

- SPF/PC can use up to 768K of memory as workspace.
- Word processing commands.
- 4-way scrolling.
- Split screen support.
- On-line help facility.
- Monochrome or color support.
- Instantaneous screen display.
- Block Move/Copy/Repeat/Delete/Overlay/Shift.
- And much more...

*\$99.95 Mastercard/Visa, Check, or P.O. accepted. Add \$5.00 for shipping.

For orders and dealer information write or call Rogue River Software, 2822 Tahitian Ave., Medford, OR 97501, (503) 779-3002.

SPF/PC is a trademark of Rogue River Software. IBM is a registered trademark of International Business Machines Corp.

PC '83 BOOTH 184

TIRED OF PLAYING GAME

Sign up now for EMCE — The First Microcomputer Conference &



**Executive Microcomputer
Conference & Exposition**

June 23-25, 1983

Sheraton Centre, New York, New York



If you want to learn how to select and use the micro-computing products and services that are revolutionizing business . . .

If you're tired of micro shows heavy on video games, but light on the serious applications you need to succeed . . .

EMCE is for you!

It's designed especially for executives who are responsible for the selection or use of micros in their organizations, executives who use micros as decision support tools, and business managers who employ (or want to employ) micros to manage their businesses.

The Conference Program

Thursday, June 23 & Friday, June 24

The Thursday and Friday conference program is divided into four major "tracks," but you are not required to sign up for a particular group of sessions. You may select the sessions you need from any of the 48 sessions available and create a conference program designed to suit your unique information needs. You may even choose to attend one day instead of two if you want. A detailed agenda will be sent to you prior to the conference for your advance planning, so you don't waste a minute!

Special General Session for Thursday Attendees:

The Revolt of the Masses: Micros and the Changing Role of DP.
(5:00-6:00 p.m.)
Dr. Michael Hammer, President, Hammer & Company

I. Personal Computing in a Corporate Environment

For Executives in large corporations who are involved in using micros in distributed data processing or as standalone executive workstations, the EMCE conference program includes:

Keynote: Increasing Corporate Productivity via the Personal Computer (Thurs., 9:00-10:00 a.m.)
Mayford Roark, Executive Director of Systems, Ford Motor Company

The Executive/Professional Workstation (Thurs., 10:00-11:00 a.m.)
Evelyn Wilk, Consultant, Arthur Andersen & Co.

DDP with Microcomputers (Thurs., 2:00-3:30 p.m.)
Moderator: Jerrold Eisen, President, Office Sciences International
Panelists: Phil Dixon, MIS Manager, Apple Computer; Robert A. Miller, Special Assistant to the Deputy Secretary of Treasury, U.S. Treasury Department

The Information Resource Center (Friday, 3:45-5:15 p.m.)
Moderator: Thomas Kosnick, Researcher, Stanford Business School;
Panelist: Alan Gross, Director of Systems, International Paper Company

The Role of Apple and IBM in Corporate Computing (Friday, 3:45-5:00 p.m.)
Moderator: David Bunnell, Publisher, "PC World"

New Issues of Confidentiality and Security in Organizational Information Processing (Friday, 9:00-10:00 a.m.)

Professor Alan F. Weston, Columbia University

Personal Computer Acquisition and Implementation Strategies (Friday, 10:00-11:00 a.m.)

Don L. Eddy, Principal, Office Futures Now, Inc.

Compatible Systems and Software for the IBM PC (Friday, 2:00-3:30 p.m.)

Moderator: Steve Cook, Technical Editor, "PC World"

Panelists: Chris Larson, Product Marketing Manager, MS/DOS, MicroSoft; Steve Flannigan, VP Software, Compaq Computer Corp.

2. Introduction to Microcomputing and its Applications

For Executives who are concerned with the selection and use of microcomputers primarily in smaller businesses, the EMCE conference highlights:

Keynote: The Personal Computer: The Mouse that Roared! (Thurs., 9:00-10:00 a.m.)

Law Kornfeld, Director, Tandy Corporation

How to Buy a Personal Computer (Thurs., 10:00-11:00 a.m.)
Lawrence Gavoni, Director, Gavoni Microcomputer Training School, Boston, MA

Spread Sheet/Financial Applications (Thurs., 2:00-3:30 p.m.)
Moderator: Hannah Blank, Vice President-MIS, Chase Manhattan Bank

Panelists: Seneel Kulkarni, Mktg. Mgr., Standalone Products, VisiCorp; Russell Warner, Product Mktg. Mgr., End user Products, MicroSoft

New and Future Trends in Personal Computing (Thurs., 3:45-5:00 p.m.)

John C. Drorak, Editor, "InfoWorld"

Word Processing Packages for Personal Computers (Friday, 9:00-10:00 a.m.)

Susan Harmon, President, Transitions

DBMS on Personal Computers (Friday, 10:00-11:00 a.m.)
Adam Green, President, SoftwareBase

A Look at Integrated Software Packages (Friday, 2:00-3:30 p.m.)
Moderator: Dan Coursey, Sr. Market Analyst, International Data Corporation

Panelists: Chris Morgan, VP, Communications, Lotus Development Corp.; Brian Fischer, Sr. Vice President, Contract Management Corp.; Ron Folk, OEM Customer Mktg. Mgr., VisiCorp

Panel: Executive Personal Computer Success (Friday, 3:45-5:15 p.m.)

Moderator: Alan Snieder, Partner, Laventhol & Horwath

3. Technological Developments in Personal Computing

For Executives who wish to keep up with changing microcomputer technologies in mass storage, business graphics, operating systems, and more, the EMCE conference highlights:

Keynote: The Future of Personal Computer Software for Business (Thurs., 9:00-10:00 a.m.)

Dan Fylstra, Chairman, VisiCorp

What's New in Peripherals (Thurs., 10:00-11:00 a.m.)

Peter Burgess, President, Burgess Management Associates

Developments in Personal Computer Business Graphics (Thurs., 2:00-3:30 p.m.)

Moderator: Dave Needle, Sr. Writer, "InfoWorld"

Developments in Mass Storage Capabilities (Thurs., 3:45-5:00 p.m.)

Moderator: Will Zachmann, VP, Office of Technology Assessment, International Data Corporation

Utilities (Friday, 10:00-11:00 a.m.)

Haines Gaffner, President, LINK

Popular Programming Languages (Friday, 10:00-11:00 a.m.)

Gordon Eubanks, Vice President, Commercial Systems Division, Digital Research, Inc.

Operating System Selection: 8 to 16 Bit (Friday, 2:00-3:30 p.m.)

Moderator: Maggie Canon, Editor-in-Chief, "InfoWorld"

Panelists: Gordon Eubanks, VP-Commercial Systems, DRI; Jean Yates, President, Yates Ventures; Mark Ursino, OS Marketing Mgr., Microsoft Inc.; Natalie Shuttleworth, Manager of OS Mktg., Apple Computer

Developments in Networking (Friday, 3:45-5:15 p.m.)

Moderator: Will Zachmann, VP, Office of Technology Assessment, International Data Corporation

Panelists: Mark Stahlman, Dir., Mktg. Development, General Instrument Corp.; Art Simon, Director of Mktg., Commercial Services, Warner-Amex Cable Communications Inc.

4. Microcomputer Market Opportunities For Entrepreneurs, Dealers, Distributors and Systems Houses

We'll offer sales and venture capital strategies you won't want to miss. Session highlights include:

Keynote: Retail Opportunities in the Personal Computer Marketplace (Thurs., 9:00-10:00 a.m.)

James Finke, President, Internetwork, Inc.

Software Packaging and Distribution (Thurs., 10:00-11:00 a.m.)
Will L. Liden, Director of Marketing and Retail Communications, Micropro International

Raising Venture Capital for Software and R&D (Thurs., 2:00-3:30 p.m.)

Moderator: Jim Furneaux, Partner, L.F. Rothschild, Unterberg, & Town

Legal Issues for the Retail Distributor (Thurs., 3:45-5:00 p.m.)
Walter Klasson, Brown, Raysman & Millstein

Market Update: Competition from Japan (Friday, 10:00-11:00 a.m.)

Robert C. Wood, President, Robert Chapman Wood Company

Successful Training Strategies for Vendors and End Users (Friday, 2:00-3:30 p.m.)

Sue Cornwall, NEC Information Systems; Stephanie Rosenbaum, President, Tec-Ed

Delivering Good Maintenance, Service & Support (Friday, 3:45-5:15 p.m.)

John Harnett, Director of Planning and Development, TRW Customer Service Division

Scaling the Corporate Account: Problems & Pitfalls (Friday, 9:00-10:00 a.m.)

Special Program for Educators

Saturday, June 25

Co-sponsored by T.H.E. Journal

For Educators and Administrators, EMCE will hold a special seminar on Saturday, June 25th entitled Microcomputers in Education which includes the following sessions designed to suit the unique needs of education.

Keynote: Computer Assisted Instruction in Education (8:30-9:30 a.m.)

Dr. Sylvia Sharp, Editor-in-Chief, T.H.E. Journal

S AT COMPUTER SHOWS?

Exposition that's as serious about personal computing as you are.



EMCE gives you a complete conference program and exhibition:

- 48 conference sessions
- 3 days of exhibitions
- Hardware/Software selection
- Micros in smaller businesses
- Financial applications
- Special program of personalized instruction
- Future trends
- And much more!

The Executive Microcomputer Conference and Exposition (EMCE) is sponsored by the Conference Management Group of CW Communications, Inc., publishers of *Computerworld*, *InfoWorld*, *ISO WORLD*, and *PC World*.

Computer Funding and Acquisition (9:30-10:30 a.m.)
Ann Callather, Education Legislation & Technology,
Washington, D.C.

Logo: An Educational Language (10:45-11:45 a.m.)
Richard Carter, Director, Educational Laboratories, Lesley College
Teacher Training (1:15-2:15 p.m.)
Kevin Dwyer, Training Director, Unicom

Administrative Applications for Educational Institutions (2:15-3:15 p.m.)
Patricia Carter, Computer Applications Specialist, MASBO Co/Op

Educational Computing at Home (3:30-5:00 p.m.)
Moderator: Scott Mace, Sr. Editor, "InfoWorld"
Panelists: Ken Komoski, Executive Director, Educational Products
Information Exchange Institute; Richard Robinson, President,
Scholastic Inc.

Special Hands-On Workshop

Thursday, June 23 & Friday, June 24

In addition to the main conference program, EMCE will offer a two-day **Executive Microcomputer Workshop** for those professionals who wish to get hands-on experience with an Apple or IBM Personal Computer. The workshop will focus on four specific applications: spreadsheet analysis using VISICALC, data base management using dBase II, graphics and communications. An in-class network will be set up to demonstrate the communications capabilities of personal computers. The two-day seminar will run concurrently with the EMCE Conference program and will include admission to the exhibits and special feature sessions on Saturday, June 25.

The **Executive Microcomputer Workshop** will be sponsored by the **Personal Computer Learning Center of New York City** and will be held at the Center, located at 1120 Avenue of the Americas, on Thursday and Friday June 23 & 24th. **Enrollment is limited**, so please register early with your choice of hands-on using either an Apple or an IBM PC.

FREE Feature Sessions for All Saturday Attendees

FREE Special Feature Sessions for all Saturday EMCE attendees (exhibit or conference) will be held Saturday, June 25 from 9:00-1:00 p.m. The sessions will focus on professional applications for micros and starting your own home based business or office, and will also discuss the personal computer's impact on family life, kids and recreation.

1. The Home Office — Basics

Getting Started — Hardware & Where to Buy (9:00-10:00 a.m.)
Daniel P. Coursey, Senior Market Analyst, International Data Corp.

Software Applications — Selection & Uses (10:00-11:00 a.m.)

David Lamb, Sr. Research Associate, LINK

Setup & The First Six Months (11:00 a.m.-12:00 noon)

Paul Conover, President, Praxis Communications

Programming Languages (12:00 noon-1:00 p.m.)

A. Richard Miller, Partner, Miller Microcomputer Services

2. Professional Applications

A Look at Spread Sheet Applications (9:00-10:00 a.m.)

Ralph Wagner, President, Microsource/Financial, Inc.

Investment Management Applications for Micro's (10:00-11:00 a.m.)

Jon Zonderman, Contributing Editor, "Computer Update"

On-line Data Base Systems (11:00 a.m.-12:00 noon)

Steven Sieck, Dir., Electronic Information Program, LINK

Word Processing Packages for Microcomputers (12:00 noon-1:00 p.m.)

Ronnie Marshak, Contributing Editor, "The Seybold Report"

3. Home/Family Microworld

Household Management (9:00-10:00 a.m.)

Micros for Organizations & Groups (10:00-11:00 a.m.)

Home Micro-Based Businesses (11:00 a.m.-12:00 noon)

A. Richard Miller, Partner, Miller Microcomputer Services

Micros: Impact on Family Life, Kids & Recreation (12:00 noon-1:00 p.m.)

Dan Oeklen, Executive Producer, Children's Computer Workshop

Over 100 Professional Exhibits at EMCE

EMCE exhibits offer the latest in business-oriented hardware, software, peripherals, systems, accessories and resources from a wide selection of suppliers including companies like IBM, Digital Equipment Corporation, BASF Systems Corp., Computerland, Addison Wesley, GRID Systems, Micro Systems International, Key Software and Victor Electronics . . . to name just a few. EMCE's designed for you to see, touch and learn what you need to know about micros. **Your conference registration includes complete, 3-day exposition attendance.** Or you can sign up for the exhibits only. If you register in advance, using the form in this ad, you get two bonuses:

1. **Early admission** — only conference registrants and advanced registrants will be admitted to the hall between 11 a.m. and NOON on Thursday and Friday.
2. **\$5.00 discount** on admission price.

Register for EMCE now! The Sheraton Centre in New York City is the place; June 23-25, 1983 are the dates. Exposition hours: 11-7, Thursday and Friday; 10-6, Saturday. For more information on the conference and exposition, dial 1-800-225-4698 (In Massachusetts, 617-879-0700) and ask for Louise Myerow.

EMCETM
**Executive Microcomputer
Conference & Exposition**

Conference Registration

Includes: Complete Exhibit Admission with 11:00 a.m. early admission privilege

☐ Full Two-Day Conference Registration* \$295

☐ One Day Conference Registration \$195

☐ Thurs. only ☐ Friday only

☐ Executive Microcomputer Workshop* \$395

Thurs. and Friday

Choose one: ☐ Apple ☐ IBM PC

☐ Micros in Education \$ 95

Sat. June 25

*Includes Saturday Special Feature Programs

Conference registrants **only** may register by phone: Call 800-

225-4698. In Mass. call collect 617-879-0700 and ask for Louise Myerow.

Registrations Cancelled later than June 15 are subject to a \$50.00 service charge. Registration may be transferred at no charge.

EMCE — Sheraton Centre, New York City June 23-25, 1983

☐ YES! Register me for EMCE (fill out attached conference form)

☐ YES! Register me for EMCE Exhibit Only (fill out attached exhibit form)

☐ Send Information Only!

Name & Title _____

Company _____

Street/P.O. Box _____

City _____ State _____ Zip Code _____

Telephone () _____

TOTAL \$ _____ Charge to: ☐ American Express ☐ Check Enclosed

☐ VISA ☐ Bill my company (conference only)

☐ MasterCard ☐ Bill me (conference only)

Exp. date _____ Acct. # _____

Signature _____

Send Form and Payment to: EMCE, Conference Management Group, Box 880, Framingham, MA 01701.

EMC3

Exhibit Only Registration

SAVE \$5 by Registering in Advance and Get Early Admission. (Only Advance registrants will be allowed into show between 11:00 a.m. and NOON on Thursday and Friday)

☐ Advance Pre-Paid 3 day exhibit registration \$20

(\$25 at door)

☐ Advance Pre-Paid 1 day exhibit registration \$10

(\$15 at door)

☐ Thurs. ☐ Friday ☐ Saturday

3-Day Exhibit Registration Includes Special Feature Sessions on Saturday, June 25th from 9:00 a.m. to 1:00 p.m.

You must enclose your check or charge information. We cannot bill you or take your exhibit registration over the phone. Exhibit registration is non-refundable.

Announcing A Breakthrough for IBM O/S Systems Documentation/Maintenance

The M&G Automated Documentation System produces structural and data flow documentation for large scale systems and programs in data element detail.

Now you can save hundreds of programmer hours. Get maintenance projects finished quickly and easily. Get complete, up-to-date documentation with the Automated Documentation System from M&G.

Check these advantages:

- Reduced programmer hours
- Improved programmer morale
- Better quality programs
- Improved standards compliance

The new M&G system produces program and system documentation by automatically analyzing machine-readable COBOL source program statements and reporting the relationships between programs, subroutines, COPY books, files, records, and data elements. For complete details and price information call today tel. (617) 647-1052.



M&G Software Services Inc. 18 McAuliffe Road, Randolph, MA 02368

With Corona Systems

Xerox Signs Support Pact

ANAHEIM, Calif. — Xerox Corp. has negotiated a service and support contract with Corona Data Systems Inc. a Westlake Village, Calif. manufacturer of software compatible IBM personal computer systems, it was announced at the National Computer Conference here recently.

Under the terms of the agreement, Xerox will provide on-site support for Corona's products and it is expected to be the first of several service agreements to be announced by Xerox over the next few weeks. Industry analysts say the contract is an attempt by Xerox to use its support facilities to encourage small microcomputer vendors to enter the Fortune 1000 marketplace while agree-

ing to a long-term service contract with the office products giant.

To date, many large corporations have been reluctant to purchase personal computers from small vendors because they fear a lack of follow-up support services. As a result, established vendors such as IBM and Apple Computer, Inc. have largely dominated the market for microcomputers.

Division Aims To Improve User Service

(Continued from Page 67)

Crawford said that before the reorganization, his division was only a "peddler of iron" in the vertical markets it was serving. Now his group is in a position to become a broad-based supplier of total system solutions within these markets, he claimed.

"In short, we are moving from being a product supplier to a systems supplier," Crawford said.

"Our customer relations are changing. We are trying to augment our products so we can deliver more of a solution to the customer instead of just providing the tools," noted Mary Zak, manager of DG's small systems product marketing.

While the General Systems Division still procures the majority of its software through OEMs, Zak said the division is beginning to work more closely with its end users in terms of developing and marketing the software. Zak said the division is now writing software that is more user friendly and is rewriting its documentation so that it takes on an end-user orientation. "We are also putting a lot more emphasis on customer support," she added.

Zak said the company's recent adoption of the Ada programming language for its MV series of superminicomputers (CW, May 9) will help its efforts to penetrate not only the office automation market but also the industrial automation market.

While not widely known, DG has been a major supplier of systems to the military through OEMs, such as Rolm Telecommunications, according to Crawford. In addition to military applications, the firm will use Ada in medical and mapping applications, he said.

Crawford thinks DG's high-end supermini, the MV/10000, will be the key to success in the industrial automation market because of its processing power.

"The 10000 should do well because it can handle the large data bases associated with [computer-aided engineering]," Crawford contended.

Crawford said DG is also placing increased emphasis on vertical product integration, which has resulted in increased profit margins and a tighter quality control.

"You also get greater efficiency out of your software through vertical integration because you know the hardware you are dealing with and can optimize [the software] for that processor," Zak added.

Telecommunication Challenges & Decision Points:
Divestiture, New Vendors, New Products, New Prices,
New Markets, Exploding Opportunities... &... Risk;

Survive Through Strategic Planning

TELECOMMUNICATIONS

**DECISION
POINT 83**

NEW YORK CITY
JUNE 7, 8, 9, 1983

Columbia University Club

Presented by:



The DMW Group, Inc.
A DDI Martin Company

COMPUTERWORLD
On Communications



COMMUNICATION
NETWORKS

Limited seating.
**Register
Now:**

Why You Should Attend:

DecisionPoint 83 is a three day conference dedicated to exploiting the tremendous opportunities and minimizing the inevitable risks in the Telecommunications Industry. The User Group, Vendor Group and the Investment Community should attend.

Day One: \$295

The State of the Industry:

Industry leaders will provide a comprehensive analysis of the industry.

Day Two: \$395

Assessing the Environment:

Leaders of major vendors will present their views of new products and services you can expect in the next critical years.

Day Three: \$495

Strategic Planning in Detail:

A hands-on workshop on strategic planning methodology.

Full Three Day Program: \$995

Detach this form and return to:

CW Conference Management Group
Box 880 Framingham, MA 01701

Or call Toll-Free:

1-800-225-4698

☐ Please send more information only.

Please register me for:

- ☐ Day 1 \$295.
- ☐ Day 1 & 2 \$645.
- ☐ Day 3 \$495.
- ☐ Day 1, 2, 3 \$995.

Bill to:

Name _____

Company _____

Address _____

City _____

State _____

Zip _____

Telephone _____

Speakers:



Dr. Dixon R. Doll
Painting the way



Richard E. Wiley
Right to the Point



W. G. McGowan
MCI's Point of View



Ivan Wolff
The Marketing Points



H. Herszkowitz
Chases Plan



Ben Scott
GTE's Plan

HP Reports Strong Second-Quarter Gains

PALO ALTO, Calif. — Hewlett-Packard Co. has reported strong second quarter gains in both revenues and profits, with domestic sales reportedly providing the thrust for the

growth of the company.

Revenues at HP totaled \$1.17 billion, up 13% compared with the same quarter a year ago, while quarterly profits rose 16% to \$109 million, or 86

cents per share, as compared with earnings of \$94 million or 76 cents per share a year ago.

Incoming orders for the quarter were pegged at \$1.23 billion, an in-

crease of 14% compared with last year. Domestic orders from the firm lead the charge with an increase of 25%. International orders, on the other hand, were significantly slower than those in the U.S., rising only 2% during the same period, according to HP.

Commenting on the company's performance, John A. Young, HP's president and chief executive officer, said, "It still may be too early to call this a recovery, but we are very encouraged."

"We have seen little improvement in major markets outside the U.S. Europe is especially weak, with order levels for the quarter essentially flat compared with a year ago," he maintained.

Maguire Leads Software AG from Woods

(Continued from Page 67)

"It was a gigantic mistake for us to get involved with consulting in the first place," Maguire said. "I resisted the move for years, but finally submitted to internal pressures and began planning consulting offices all over the country. I spent a lot of time the last year closing those offices."

"Now we refer customers to people who make a living consulting with an expertise in our products," Maguire continued. "We are also subleasing a lot of empty offices. It's been a painful experience."

There were other hurts along the way. Late last year, the company paid out \$1.5 million to settle a suit with Mini-Technology, Inc. involving marketing rights of Adabas-M, Software AG's data base management system for Digital Equipment Corp.'s PDP-11 and VAX-11 minicomputers.

With the company's bottom line improving, Maguire said he is ready to move out of line operations, adding he is now searching for a replacement for himself to effect his return to chief executive duties.

Claiming "the pipeline's never looked better," Maguire outlined reasons why he believes Software AG "is very close to returning to the high profit levels we enjoyed before our big slide."

For one thing, the company recently landed a U.S. Defense Department contract which could lead to multiple installations of its full range of products, tailored to the military's specifications. Maguire said the government is footing the bill for extensive product development using Adabas, its Natural application development language and Com-Plate teleprocessing system for online control.

But Maguire is pinning Software AG's greatest hopes in what he termed a "long-standing belief in a

relational view of the software future."

Brushing aside a recent financial analysis claiming Software AG lacks a strong research organization, Maguire said the company's research efforts "have always tilted toward user-friendly, which had not been too popular with systems programmers wanting to optimize the machine and not their own time."

Thus, Software AG's next version of Natural, which Maguire said will be released this quarter, will be "pure relational."

Asked if his company might broaden its offerings to include products in the rapidly growing applications area, Maguire said, "A lot of companies will choose to go down that road, like Cullinet [Software, Inc.]. But we won't go that route."

Nielsen cable network product usage survey NHI Sept. '82 Subject to qualifications, available upon request

THE ESPN AUDIENCE HAS 40% MORE COMPUTER BUYERS. YOU'LL BE IN THE CHIPS.

ESPN's audience buys more computer hardware and software compared to the U.S. average. 56% more ESPN viewing households own video games. 33% more own home computers. And 40% more of ESPN's adult male viewers are responsible for the purchase of business computer systems.

Our audience spends more on computers because they can afford to. They have a higher household income than the U.S. average.

But you're not reaching this high consuming, upscale audience with your broadcast network—buys anymore. More affluent viewers are turning to cable TV and away from the networks. The

ESPN REPLACES NETWORK UNDERDELIVERY IN BASIC AND PAY TV HH

	TOTAL COST \$(M)	TOTAL U.S. GRP	CABLE INDEX	PAYCABLE GRP	PAYCABLE INDEX
NETWORK SPORTS SCHEDULE (6 SPORTS ANNOUNCEMENTS)	250.0	32.3	100	26.8	83
NETWORK - ESPN (5 NETWORK SPORTS ANNOUNCEMENTS)	250.0	30.1	93	34.8	108
				42.3	131

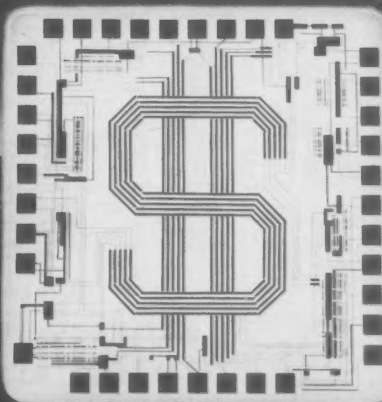
SOURCE: July '82 NTL On-Line Cable Facility. Costs based on 1982 industry estimates.

networks just can't deliver these homes like they used to. But ESPN can.

Adding ESPN to a network sports schedule provides greater weight in TV households with cable and particularly pay cable. And because of our heavy con-

centration of male viewers, we deliver more upscale men per household than the broadcast networks. All for a low out of pocket cost. How do we do it? It's simple. ESPN is the Total Sports Network. And as everyone knows, men love to watch sports. And that's exactly what they've been doing.

So, plug into ESPN's audience and you'll be programmed for success.



THE TOTAL SPORTS NETWORK™

© 1983 ESPN

VOLUME DATA ENTRY SERVICES



Call Our TOLL-FREE
HOTLINE
For Instant Quotes
800-228-9410

FOR OVER 14 YEARS

**AMERICAN
KEY DATA**

5314 S. 99th ST. • OMAHA, NE 68127

REDUCE APPLICATION BACKLOG. ENHANCE PRODUCTIVITY. STRETCH YOUR DP RESOURCES.

Read Computerworld's Special Report
on Software Productivity Packages
on June 27th.

Reduce application backlog. Enhance productivity. Stretch your DP resources. Read Computerworld's Special Report on Software Productivity Packages on June 27th.

You'll get a complete report designed to fill you in on systems software packages: Systems, teleprocessing monitors, capacity management/performance measurement tools. And, on utility packages: Debugging aids, application generators, sorts, query languages and report writers.

In addition, you'll get coverage of software products other than applications software packages that are *used by programmers rather than by end users*. These will include decision support systems, fourth generation languages and application development systems.

We're going to wrap software productivity packages up for you with application stories and case studies that describe actual end user experiences with these products. And you'll get non-product-specific tutorials that describe new concepts and ideas regarding software productivity packages.

Why is *Computerworld* devoting so much energy and coverage to these packages? Because you're gobbling them up as fast as they're developed. Because this segment of the software marketplace is growing at an incredible rate of 34% per year. And because these products are helping thousands of DP professionals



to reduce application backlog and to design and tailor applications that enhance productivity.

You'll get stories specifically designed to help you buy and plan better, like:

"How do you determine what kind of programmer productivity aids you need?"

"When do you know when you need a programmer productivity package?"

"Trends in mainframe operating systems."

"What role does DP play in a company's use of a decision support system?"

"How do programmer productivity packages affect overhead and CPU resource utilization?"

For these and many more stories designed to ask — and then answer — all your questions, just turn to your June 27th copy of *Computerworld's* Special Report on Software Productivity Packages.

And if you *sell* software productivity packages to professional DPs or to end users, you won't find a better place to reach your customers. They'll be reading this Special Report. Ad deadline is June 10th, and your *Computerworld* salesperson can give you all the details. Or, to be sure and get your ad included, just call Don Fagan, Vice President, Sales at (617) 879-0700.



COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

SALES OFFICES

BOSTON /Chris Lee, Ed Marecki, Joe Fitzhugh, Jim McClure, Kathy Doyle, Diane Sukey, (617) 879-0700

CHICAGO /Art Kossack, Newt Barrett, Chris Lee, Jean Broderick, (312) 827-4433

NEW YORK /Mike Masters, Doug Cheney, Ray Corbin, Joan Daly, Fred LoSapio, Gale M. Paterno, (201) 967-1350

ATLANTA /Jeffrey Melnick, Mike Masters, (404) 394-0758

SAN FRANCISCO /Bill Healey, Barry Milione, Theodora Franson, A.G. Germano, Eileen Dunn, (415) 421-7330

LOS ANGELES /Jim Richardson, Bob Hubbard, Beverly Raus, (714) 556-6480

POSITION ANNOUNCEMENTS

Local Area Networks are Expanding...

It isn't every day that a company as well-established and highly regarded as Codex Corporation goes into "start-up" mode for a new technology. But that's exactly what Codex is doing. And if you are a computer scientist or engineer with experience in microprocessor products, data communications, or local area networks, you can make a major contribution to our Local Area Network start-up...and share in the rapid growth that we plan for this crucial new business area, located at our New Product Development engineering facility in Canton, Massachusetts.

Codex is extending its product line to provide data communications and networking capabilities for local, metropolitan, and wide-area networks, providing services such as:

- ☐ Electronic Mail
- ☐ Directories
- ☐ File Transfer
- ☐ Gateways
- ☐ Network Management

We seek good people, and we will back them with all of our resources to create the network products of the future. Contact us today if you have experience in:

- ☐ Microprocessor and digital logic design
- ☐ Custom VLSI
- ☐ Software design and enhancement
- ☐ Communications protocols
- ☐ Customer application support
- ☐ Network integration

Interested applicants please forward your resume to:

Mr. Bob Lippman
CODEX CORPORATION
Dept. 200-530
20 Cabot Boulevard
Mansfield, MA 02048

plus...

Our on-going record of success allows Codex to offer solid opportunities to a wide variety of industry professionals. If you are curious, please submit your resume, in confidence, as indicated.

codex

MOTOROLA INC.
Information Systems Group

An Equal Opportunity/Affirmative Action Employer M/F/V/H

Data Communications Software Opportunities

Racal-Milgo, an internationally recognized leader in the data communications industry, has several software development positions available.

Our Software Development Department is involved in the design and implementation of software programs for communications systems. If you have experience in any of the following areas, we have excellent career opportunities for you:

- Real-time software engineering
- Minicomputer programming
- Systems requirements
- DEC VAX
- HDLC X.25

If you are ready to apply your technical skills in a professional environment, send your resume to:

Racal-Milgo®
Dept. 2136 MW

7800 W. Oakland Park Boulevard
Fort Lauderdale, FL 33321

Equal Opportunity Employer

EDP OPPORTUNITIES

MANAGEMENT P/M/L

P/L B/6800 Algol/Cobol fin sys\$61M+
dev MBA\$60M+
Dir appl/A1 CICS OS MVS VSAM Prior
hands-on CICS any nec\$55M
Trading Support sys dev, deg\$45M
P/L Central fin CICS Hands-on D/B\$45M
IBM P.C. Internals Software exp. BS\$45M
P/L Central fin dev D/B MBA deg\$45M
P/L DOS/VSE Main deg\$41M

MICROS

LAN Micro Mini Comp/Sci Main
Frame\$60M+
IBM P.C. sys dev Internal Alp Pascal
D/B\$51M
IBM P.C. Data Center Mgr Softwr deg\$45M
P/L Micro Basic Alp W/Chester\$40M++
IBM P.C. FinComm exp deg\$35M++
IBM P.C. 123\$27M

DATA BASE

IDMS P/L Direct staff dev deg\$50M
ADABAS 3rd normal form deg\$47M++
CICS IMS Internal deg planning\$47M++
DBA DLI Data Dic space alloc, etc\$45M++
DOE/VSE\$45M++
DBA IDMS Internal Software\$41M++

DECISION SUPPORT

C Language fin modeling PHD\$Open
VM/CMS Fortran dev MBA\$41M++
"Express" client contact MBA\$40M++
Fortran Focus VM/CMS BS/MBA dev\$33M++
Fortran Public fin MBA\$31M++
Fortran VS Research fin MBA\$25M++

SOFTWARE

MVS JES II SMP\$50M++
TCAM DPAM SNA\$50M++

PROGRAMMER

OS IMS COBOL BS/MBA dev\$43M++
OS COBOL CICS BS\$25-27M

Call Bill Borrelli (212) 348-5810
WM. HARRIS ASSOC.
25 Ann St. agency NY, NY 10038

RCA

The RCA Missile Test Project has an immediate opening at Patrick Air Force Base for an individual who possesses the following qualifications:

Manager, Software Analysis/ Data Reduction

A key assignment in analysis, programming, and data reduction. Minimum requirements:

- B.S. in Physical or Computer Science
- 5 years experience as a manager or leader of technical personnel
- 10 years working experience with large scale computers (preferably CDC) together with several years experience with reduction of range instrumentation data.
- Working knowledge of ASSEMBLY and FORTRAN languages.

RCA offers excellent fringe benefits and competitive salaries.

If interested and qualified, please call Mrs. C.A. Grimes at 305 494-5987 to arrange an interview or send resume with salary requirements to:

Professional Employment
RCA Missile Test Project
P.O. Box 4308
Patrick AFB, Florida 32925

Equal Opportunity Employer
U.S. Citizenship Required

RCA



A Tradition On The Move!

position announcements

position announcements

position announcements

position announcements

position announcements

How Fast Can You Say "Dataproducts"?

Probably not as fast as our printers can! But there's much more to our printers than speed. There's quality, durability, adaptability, affordability, and more. Just ask our customers — major OEM and systems manufacturers. They stake their reputations on our products, because their names are on them.

Software Engineers

We have outstanding opportunities for Software Engineers with BSCS, EE or CE degrees. You should have a background in microprocessor design using 8086/8088 Assembly and PLM languages for real-time controls, computer graphics or interface protocols. Opportunities for all levels of experience from 0 to 5 years plus.

Join The Printer Company...

...and discover great potential for your professional growth and success! We also provide a complete benefits package including medical, dental and life insurances, vacation and holidays. For immediate consideration, send your resume and salary history to: Dataproducts, Professional Recruitment, 2550 Zanker Road, San Jose, CA 95131. We are an equal opportunity employer m/f/h/v.



COMPUTER PROGRAMMER/82-41 \$26,390 per year (Senior Computer Programmer)

Incumbent will translate application system designs into plans of instructions and logic by which computers produce desired actions or products. Required qualifications: 3 years general experience (education above the high school level is acceptable substitute) and 2 years of specialized experience. Incumbent needs knowledge of overall design and operating principles of related computer systems, detailed and specific knowledge of the work processes, rules governing file design, and knowledge of computer related clerical procedures of the applications programs assigned.

COMPUTER SYSTEMS ANALYST/82-44 \$29,025-31,345 per year (Lead Analyst)

Incumbent will perform analysis and design tasks within the computer center's systems development section, which is responsible for developing future university computer systems and long range plans for administering systems and program. Qualifications required: 8 years experience, including 3 years progressively responsible general experience in data processing (A Bachelor's Degree in Computer Science or other related fields may be substituted), 2 years of specialized experience with CICS in a CS environment (COBOL is preferred but not required), and 1 year of specific experience in advanced computer equipment, in the applications systems design techniques, and in programming or systems.

COMPUTER PROGRAMMER ANALYST \$26,390-28,480 per year

Incumbent will be a Lead Programmer Analyst in the computer center. Qualifications required: 6 years experience, including 3 in progressively responsible general positions in data processing (Bachelor's Degree in Computer Science or other related areas may be substituted), 1 in systems analysis and design techniques which demonstrate project management responsibility in at least 1 application area, and 2 years of specific experience.

Please submit applications to University of District of Columbia, Office of Personnel Management and Development, Building 39, Room A09, 4200 Connecticut Ave., NW, Washington, DC 20008, Attention Yvonne Chandler or Diane Gordon.

Deadline for submitting applications is July 1, 1983
UDC is an equal opportunity affirmative action employer

MGR., DATA CENTER SOFTWARE SUPPORT COMPENSATION TO \$54,000

We are a Fortune 500 Hartford, CT based corporation. We are in need of a strong Manager to head up our 3 technical groups. Large scale IBM, MVS/CICS/VTAM background plus experience managing on-line, operating systems, user and D.B. support areas. Responsibilities for planning, coordinating, budgets and controls. Position reports to: Director of Data Center Systems. Please forward your resume including salary history to:

B.G.I.
3780 Whitney Avenue
Hamden, CT 06518
or call
(203) 288-7461

Data Processing

PROGRAMMER ANALYST

Honeywell Series 6000

TRW has an immediate opportunity for development and implementation of innovative computer applications in manufacturing and finance. Experience of 3 or more years preferred, with degree in information systems field. Location is an electronic components manufacturing facility in the university/resort community of Boone, North Carolina in the beautiful Blue Ridge Mountains.

Send your resume to: Harvey Bauman, P.O. Box 1860, Boone, N.C. 28607.

TRW RESISTIVE PRODUCTS

Equal Opportunity Employer M/F

SYSTEMS PROGRAMMER

The National Academy of Sciences, a prestigious Washington D.C. non-profit institution, which has been a leading national institution for over 100 years, has a career opportunity for an energetic individual to join its Office of Automation Services.

Position involves major responsibility for systems software in a rapidly evolving environment. Other responsibilities will include assisting in the evaluation of new options and setting up standards. Applicants should have a strong background in systems software with at least 2 years' experience in IBM DOS/VS, CICS, VTAM and ALC programming. Knowledge of data base concepts helpful. Environment also includes distributed processing with Wang, FOUR PHASE and micro-computer systems.

The National Academy of Sciences offers an excellent fringe benefit program, liberal annual and sick leave, paid holidays and retirement plan with immediate full vesting. Starting salary up to \$35K depending upon qualifications and experience.

Please send resume, including salary requirements, to: Personnel Office (142.024), National Academy of Sciences, 2101 Constitution Avenue N.W., Washington, D.C. 20418 or call (202) 334-3401 for further information.

An Equal Opportunity Employer

TAMPA BAY FEE PAID SENIOR SYSTEMS PROGRAMMER(S) - 3 TO \$37,000

Fortune 100 company seeks three (3) Senior Systems Programmer(s) for "State-of-the-Art" data center. Company provides in-house career progression and excellent benefits. Interviewing, relocation and our fees all company paid. Experience requirements are listed by each position.

Position 1: In-depth knowledge of VTAM/NCP. Experience with Network Performance Analysis (NPA).

Position 2: In-depth knowledge of JES 3, OS and SMP; experience working with SCP's (VS1 and MVS) as guest operating systems under JES 3 is required.

Position 3: In-depth knowledge of VS1/BPE, VTAM, SMP and OS, SCP's (VS1 and MVS). Guest operating system under VM/SP (Mandatory).

Please submit resume and/or call Bill Denny, Vice President for appointment. (904) 398-7371.

JIM KING AND ASSOCIATES

1840 Gulf Life Tower
Jacksonville, FL 32207

FOR EDP POSITIONS In The PACIFIC NORTHWEST

MANAGER..... from \$60K
Set up and manage R&D facility. Expert systems, natural language, app., development & management exp.

PRINCIPLE INVESTIGATOR..... from \$60K
Set up R&D lab adjoining major university, lead staff in knowledge engineering, expert systems, etc.

MVS Systems Programmers..... to \$35K
Many excellent opportunities

DATA BASE ANALYST..... to \$35K
Support major new development

SYSTEMS PROGRAMMER..... to \$32K
DOS/VS

DATA BASE ANALYST..... to \$32K
Any major DB software

PROGRAMMER ANALYST..... \$30K
User & interface & design

For a confidential discussion of these and other positions, call collect or send resume to:

**HOUSER, MARTIN
MORRIS & ASSOC.
(206) 453-2700
C-90015, 1940 116th Ave., N.E.
Bellevue, WA 98009
All fees employer paid.**

WASHINGTON, D.C. HP3000 PROGRAMMER/ANALYSTS

Large office products distributor/retailer has immediate openings for 2 or 3 PAs with business background, HP3000 COBOL and IMAGE experience required. Duties include development of programs to convert existing systems to HP3000/64, BASIC, Microdata or PRIME experience desirable. Excellent advancement opportunities. Company benefits include competitive salary, tuition reimbursement, medical/dental insurance. Send resume to:

Bob Thompson
GINS
5820 Agar Road
Hyttsville, Md 20782

New Department Head position search reopened: Computer Information Systems and Management, Tarleton State University, a part of the Texas A&M University System. Applicants should have Ph.D. or D.B.A. in either computer discipline or in management, with evidence of significant skills and background in the other field. Demonstrated business and/or academic leadership skills essential. College teaching experience. Salary range to \$50,000 for 12 months. Send resume to Dr. LeVelle Mills, Search and Screen Committee, Tarleton State University, Box T-2001 Tarleton Station, Stephenville, Texas 76402. Deadline July 1, 1983 or until position is filled. An Affirmative Action, Equal Opportunity Employer.

REGIONAL INFORMATION CENTER

Alachua County
Gainesville, Florida

Progressive department with IBM 4341, DOS/VS, CICS/VS (35 Terminals), DDP using 4 Phase System; 24 hr/7 day operation with 49 employees and approx. \$2 million annual budget/claims.

ASSISTANT DIRECTOR (2 positions) Salary: \$26,136-34,292. Requires BA/BS in Computer Science, Math, Engineering, Business or related field and 5 years progressively responsible experience in data systems operations of which 3 years must include supervisory experience. **ASSISTANT DIRECTOR OF OPERATIONS** is responsible for 20 employees in OPS, KP control and systems software operating systems generation, CICS GEN, third party software interfaces. Knowledge of IBM operating systems, computer scheduling and teleprocessing highly desirable. **ASSISTANT DIRECTOR APPLICATIONS DEVELOPMENT** is responsible for supervision and coordination of project teams and development of property appraiser, tax collector, clerk of court, supervisor of elections, sheriff, criminal justice, utilities and general county applications (support for public works, department of emergency services, human resources, budgeting, corrections). Also responsible for financial functions of all the above (gen ledger, AP, AR, payroll, personnel).

DATA SYSTEMS COORDINATOR/SECTION CHIEF Salary: \$23,678-31,067. Involved with Sysgen for DOS/VS maintaining TP network and DDP with IBM and 4 Phase equipment. Requires BA/BS in Computer Science, Electrical Engineering, Math or related field and 5 years experience in programming and systems design of which 2 years must include progressively responsible administrative and supervisory experience.

Send resume to: Alachua County Personnel, P.O. Box 1467, Gainesville, FL 32602.

Deadline: June 15, 1983.
Note: Applications and resumes are subject to disclosure under The Florida Public Record Law, AAJCE.

SR. SYSTEMS ANALYST in charge of team of programmers designing & implementing computer systems related to financial insures. Responsible for maintenance & enhancement of systems, & providing vital skills to ensure successful & cost effective operations. B.Sc. or equiv. in Computer Science, Data Processing, Math. or Physics. Must have knowledge of COBOL & ASSEMBLER. 2 yrs exp. or 2 yrs in programming. \$32,000 p.a. to work 35hrs/5 days/wk PLEASE SEND RESUMES. Acalis, Inc., 90 John Street, NY, NY 10038.

SYSTEMS ANALYST--To analyze business procedures and problems to refine data and convert it to programmable form for electronic data processing; to study existing data handling system of firm's clients in order to evaluate effectiveness and to develop, design and implement new systems to improve production or work flow, as required. B.S. Degree in Computer Science required. Must be familiar with data base management (DBMS) and message control (MCS) systems in on-line large-scale computer environment; must be proficient in COBOL 74 and report languages; must have familiarity with Burroughs 8 1900 and microprocessor 8086. Must be willing to work evenings and weekends when required. Salary \$21,500/year. Apply with resume to Atlanta Job Service Center, One Peachtree Street, Atlanta, GA 30303, Job Bank Number 73921.

Researching
all your options
will show you that
your best source is
COMPUTERWORLD

position announcements

position announcements

position announcements

position announcements

position announcements

MAKE IT



In San Diego or San Jose

Success. You make it happen when you've got what it takes. And a great product makes it happen faster. That's where Calma comes in.

We make products that support our reputation as a world leader in computer-aided design and manufacturing (CAD/CAM) technology. A reputation that can only be maintained by hiring the best people. If you have what it takes to make it at Calma, look into the following career opportunities:

Programmer, VAX/VMS

- Analyze performance and develop creative solutions to enhance response of our graphics system
- BS/MS in computer science or math and experience with performance monitoring tools
- Experience with VAX/VMS system programming and tuning

Programmer, Scientific Applications

- Work on enhancements to CAD/CAM software
- Experience in scientific applications
- BS in computer science or math

Programmer, Manufacturing Applications

- Two positions, including a senior position, are available
- Design, implement and test software for computer graphics manufacturing applications
- Senior position requires 3-5 years' experience with computer graphics, and manufacturing applications experience; BS in engineering is preferred
- Second position requires 1-3 years' experience, preferably in manufacturing, computer graphics or programming; manufacturing knowledge (education and/or experience) and the ability to apply it is essential

Programmer, Communications

- Integrate communications capabilities with CAD/CAM software

Programmer, Database/Systems

- Integrate database management control systems into CAD/CAM software

Programmers

- Design and implement analysis formatter
- BS in math, computer science or engineering
- 2-5 years' experience in FEM and CAD/CAM systems

Manager, Architectural Group

- Responsible for leading a small group in developing state-of-the-art CAD/CAM architectural product line
- BS/MS/PhD in architecture, and 3-5 years' experience

Software Quality Assurance Engineers

- Develop creative solutions to verify and validate software in the applications areas of architecture, construction, mechanical and manufacturing
- BS/MS in engineering, design or computer science, and 2-5 years' experience in engineering/design including programming

Please send your resume to Sue Speed, Calma Company, Dept. S530C, 11080 Roselle Street, San Diego, CA 92121.

Software Design Engineer

- Develop software for communication boards, interfaces, controllers, graphic subsystems
- Multiprocessing environment background
- Two years' experience with machine level code, UNIX, microprocessors and communications

Communications Group Software Development (Two Openings)

- One management opportunity with past management/supervisory experience needed
- One staff member with 2-5 years' experience
- Both positions will develop Calma's future communications software
- Both positions require technical knowledge of systems communications and networks
- Familiarity with large, real-time, high speed software systems development

Senior Member, Programming Staff

- Responsible for maintenance and enhancement of Calma's GDSII software
- Knowledge of applications and system software for CAD systems
- Experience with assembly and high-level languages

Sr. Diagnostic Programmer (3 openings)

- Committed to specification analysis before design and coding, structured design, detailed documentation, design for maintainability, comprehensive testing
- Responsible for manufacturing and QA diagnostics
- Minimum of BSEE preferred, MSCS helpful
- High-level language skills required (FORTRAN optimal, but Pascal, PL/1 or ALGOL acceptable)

Software Support Manager

- Manage department of 10 programmers involved in writing diagnostic programs
- Specify goals and project tasks and scheduling to meet completion deadlines
- Provide high-level technical guidance and assistance to staff
- BS in computer science, math or engineering
- 5 or more years' computer programming experience, including one or more years in VAX or DG assembly languages and one or more years as project leader, supervisor or manager of programming department

Sr. Diagnostic Engineer

- Write, maintain and support diagnostic programs for the Calma range of products, based on DG eclipse, DEC VAX and Apollo (6800) systems
- Supply diagnostic tapes for customer engineers
- BS in computer science, math or engineering and 6-9 years' related experience
- 3 or more years' experience in computer programming, including 6 months in VAX Macro assembler or DG Nova/Eclipse assembly language
- Hardware analysis or troubleshooting experience highly advantageous

National Technical Support Manager

- Direct the technical support for field service personnel
- Administer department budgets, goals and objectives
- BS in engineering or related field and 4-6 years' engineering management experience in a computer-based system environment

Technical Support Engineer

- Provide phone and on-site support to field service, and help in problem solving
- Experience with DEC, VAX and/or Data General

Director Communications, Software Products

- Responsible for directing several advanced communications software product teams
- BSEE plus 10 years' in software/hardware development with a minimum of 5 years' management experience
- Knowledge of local and wide area networks as well as microwave, fiber optics, and satellite communications capabilities

Please send your resume to David Ward, Calma Company, Dept. W530C, 2901 Tasman Drive, MS LS2FF, Santa Clara, CA 95050. We are an equal opportunity employer, m/f/h.

First in CAD/CAM Technology



calma

Calma Company is a wholly-owned subsidiary of General Electric Company, U.S.A. is a registered trademark of General Electric Company, U.S.A.

position announcements

position announcements

position announcements

position announcements

position announcements

DO YOU HAVE ANY QUESTIONS ABOUT YOUR COMPUTER CAREER GROWTH?

You can get the answers from NCA. All our people are specialists on all aspects of career advancement as well as on the current opportunities market. They can provide you with dependable, realistic information on any questions you may have... and without any obligation to you whatever. Just call. Or come in. Or mail your resume, with your questions, to the NCA firm nearest to you.

BOSTON: Robert Kleven and Co., Inc.
North Brook Park, Suite One, 181 Bedford Street
Levittown, Massachusetts 02173 (617) 861-1020
CHICAGO: Thos. Hirtz & Associates
150 N. Western Drive, Suite 1700
Chicago, Illinois 60606 (312) 977-1555
COLUMBUS: Michael Thomas, Inc.
65 E. Wilson Bridge Road, Suite 201
Worthington, Ohio 43085 (614) 846-0926
DALLAS: Data/Pers Personnel Consultants
12720 Huilcrest, Suite 520
Dallas, Texas 75220 (214) 661-6600
DETROIT: Electronic Systems Personnel, Inc.
3000 Town Center, Suite 2580
Southfield, Michigan 48075 (313) 353-5580
FLORIDA: Data Sciences Personnel, Inc.
P.O. Box 8577
Hollywood, Florida 33024 (305) 434-6172
HARTFORD: Compass, Inc.
501 Asylum Avenue
Hartford, Connecticut 06105 (203) 549-4240
HOUSTON: Career Consultants, Inc.
2000 South Post Oak
Houston, Texas 77056 (713) 626-4100
INDIANAPOLIS: Computer Personnel Services, Inc.
101 N. Pennsylvania
Indianapolis, Indiana 46204 (317) 634-4712
MILWAUKEE: EOP Consultants, Inc.
14350 W. Bluemound Road
Milwaukee, Wisconsin 53226 (414) 475-0077
MINNEAPOLIS: Electronic Systems Personnel
638 Twin City Federal Tower, 121 S. 6th St.
Minneapolis, Minnesota 55402 (612) 338-6714

NEW JERSEY: Systems Search
90 Millburn Avenue
Millburn, New Jersey 07041 (201) 761-4400
NEW YORK: Botal Associates, Inc.
7 Dry Street, Suite 410
New York, New York 10007 (212) 227-7370
NORTH CAROLINA: DataMasters
Div. of Taskforce, Inc., P.O. Box 6888
Greensboro, North Carolina 27405
(919) 373-1461
PHILADELPHIA: Systems Personnel, Inc.
115 West State Street
Media, Pennsylvania 19063 (215) 565-8880
PROVIDENCE: Professional Career Consultants
4528 North 17th Street, Suite 410
Providence, Rhode Island 02906 (401) 274-6666
SAN DIEGO: Electronic Systems Personnel Agency
2607 First Avenue
San Diego, California 92103 (619) 238-0811
SAN FRANCISCO: The Computer Resources Group
Inc., Agency 303 Sacramento Street
San Francisco, California 94111 (415) 398-3535
SEATTLE: Houser, Martin, Morris & Associates
1840 16th Avenue N.E.
Bellevue, Washington 98004 (206) 453-2700
WASHINGTON D.C.: ESP Systems Corporation
914 Lamberton Drive
Silver Spring, Maryland 20902 (301) 649-6171

Call the NCA firm nearest to you for Salary Survey and Relocation information.



MIT Data Processing

Systems Programmer for an opening in the Department of Aeronautics & Astronautics. Primary responsibility to set up and manage a Perkin Elmer-based CAD/CAM system, two VAX 750 systems, a PDP-11/10, and a PDP 11/23 system. Will perform system generation and software maintenance; assist in selection and integration of new hardware into these systems; assist with application software, particularly computer graphics; serve as coordinator for hardware maintenance requests; and provide consultation for students and faculty. Requires advanced degree in Engineering or Computer Science, general knowledge of minicomputer operating system software and FORTRAN. Working knowledge of VAX system software and assembly language preferred. Please submit 2 copies of resume, referencing Job No. R1067, to: Prof. James W. Mar, c/o MIT Personnel Office, E19-239, 77 Massachusetts Avenue, Cambridge, MA 02139.

Computer Programmer for an Office of Sponsored Research Staff position with the Department of Electrical Engineering & Computer Science. Will support microsystems (VLSI) Program. Duties include: maintaining implementations of programming language Nial on VAX, IBM, PC, and DEC System 20 computers; implementing and maintaining a file-based framework for VLSI and integrated-system CAD tools; preparing and maintaining system for distribution of VLSI software and libraries; maintaining various languages of interest in VLSI design; installing imported VLSI software; coordinating activities of faculty, students and staff. Requires 2 years related experience, along with ability to work independently toward commonly understood set of goals. Background in VLSI or willingness to be trained in same essential. Knowledge of high-level languages, especially C, also vital. Some experience with UNIX operating system helpful. Please submit 2 copies of resume, referencing Job No. R1068, to: Mr. J. Kenneth W. Chin, MIT Personnel Office, E19-239, 77 Massachusetts Avenue, Cambridge, MA 02139.

MIT is an equal opportunity/affirmative action employer

MIT

ADMINISTRATIVE APPLICATIONS COORDINATOR

Bowdoin College seeks an individual with an AB/BS with knowledge of business or college accounting practices, familiarity with on-line data base techniques, and the programming competence equivalent to 2-3 years of programming experience. Knowledge of FORTRAN will be desirable. The Administrative Applications Coordinator will be responsible for the conversion, design, documentation and maintenance of programs for financial and other administrative records through an on-line, integrated file approach using a relational data base system as a fundamental tool. Additional responsibilities will include some training of administrative personnel in the use of relevant systems.

The Computing Center has a DEC System 1091 operating under TOPS-10 with 2.5 megabytes of memory and 900 megabytes of disk storage. The system serves administrative and academic users through 48 on-line terminals. The college offers competitive salary and fringe benefits. Send letters of application and a resume before June 22, 1983 to:

Myron Curtis, Director
Computing Center
Bowdoin College
Brunswick, ME 04011
Bowdoin College is an Equal Opportunity/Affirmative Action Employer

MANAGER, TELECOMMUNICATIONS

Northern Arizona University
of Flagstaff, Arizona

Seeks a well-experienced manager for the Telecommunications Department. Progressively responsible experience in telecommunications including both technical knowledge and managerial experience. Major responsibilities include planning, organizing, directing and controlling the overall telecommunications operation. (The University is interested in developing immediate plans for the purchase or lease of a new telephone system).

Qualifications

An appropriate Bachelor's degree and a minimum of 5 years experience with telecommunications systems along with a minimum of 3 years of successful management experience. The chosen candidate must possess a broad and thorough knowledge of the telephone industry's product lines and services.

Applications

Letters of interest, resume, 3 written references and other pertinent information should be mailed (no later than June 15, 1983) to:

Chair, Manager-Telecommunications
Screening Committee
Northern Arizona University
Box 4102
Flagstaff, AZ 86011
NAU is an Equal Opportunity/Affirmative Action Title IX/Section 504 Employer.

SYSTEMS PROGRAMMER
DEPARTMENT OF AERONAUTICS
AND ASTRONAUTICS
MASSACHUSETTS INSTITUTE
OF TECHNOLOGY

System Programmer for the Department of Aeronautics and Astronautics. Primary responsibility will be to set up and manage a Perkin Elmer-based CAD/CAM system, two VAX 750 systems, a PDP 11/10, and a PDP 11/23 system. Duties related to these systems will be to perform system generation and software maintenance, assist in selection and integration of new hardware into these systems, assist with application software (particularly computer graphics), be the focal point for hardware maintenance requests, and provide consulting help on software and faculty. Advanced degree in Engineering or Computer Science, general knowledge of minicomputer operating system software and FORTRAN language required. Working knowledge of VAX system software and assembly language extremely useful. The position is available immediately.

Qualified applicants may send a detailed resume to:

Professor James W. Mar, Head
Department of Aeronautics
and Astronautics
Room 33-207
Massachusetts Institute of Technology
Cambridge, MA 02139

M.I.T. is an equal opportunity/affirmative action employer

ADVISORY TECHNICAL REPRESENTATIVE

One of the world's largest software companies based in Cincinnati, Ohio is seeking experienced people to install, educate and support customers and vendors in Data Base and Data Communications software products. This individual must have at least four years experience as a Marketing Technical Representative and in programming in a commercial environment or equivalent technical sales or support experience. Must also have experience as a public speaker and teacher. Working knowledge of at least two of the following hardware and operation systems: NCR, Wang, Data General, Harris, Gould S.E.L., and Honeywell equipment. This individual must also be able to provide technical sales and consulting assistance to vendors and sales personnel and is responsible for all aspects of training Associate Technical Representatives. Salary: \$35,000 per year. Hours: 8:30 a.m. to 5:30 p.m. (9:12 hours per week) Forward this ad and your resume to:

Ohio Bureau of Employment Services
1918 Central Parkway
Cincinnati, Ohio 45214
Refer to Job Order No. 85181723
An Equal Opportunity Employer

Systems Programmer

Honeywell Test Instruments Division designs, manufactures and markets instrumentation tape recorders, graphic and imaging recorders and medical instrumentation. We have an immediate need in our Data Processing Area for a large scale systems support analyst to work with our new Honeywell DPS 844 computer. This is a challenging opportunity with responsibility for front end processor data communications. Knowledge of GCOS systems software maintenance and a minimum of 3 years work experience in the following areas highly desirable: GRTS II, level 66 DPS communications processors, GCOS III systems start-up, GMAP, FMS, and TSS.

For immediate confidential consideration please submit your resume to Sue Wells:

Test Instruments Division

P.O. Box 5227

Denver, Colorado 80217

Honeywell

Equal Opportunity Employer M/F

CAD/CAM SYSTEM SALES

At CAMAX Systems, talents of our staff of sales professionals is a key to our success. If you are lured by the potential of a rapidly growing market we want to talk to you. CAMAX is a growth-oriented company developing and cultivating a strong niche market. CAMAX interactive 3D CAD/CAM systems address manufacturing productivity needs through the applications of state-of-the-art technology. To enhance your ability to succeed, CAMAX has developed a strong team-oriented sales and marketing environment to capitalize on the opportunities of the CAD/CAM market.

If you are a sales professional with at least two years CAD/CAM and/or related system sales experience, this is an opportunity for you. Opportunities exist in New York, New Jersey, Chicago, Detroit, Cleveland, Cincinnati, Houston, Dallas and Los Angeles. As a leader, we provide excellent benefits, a highly competitive compensation program and potential for management growth.

For prompt consideration, please forward your resume and salary history/requirements, in confidence to:

HERMAN A. RUBIN
VICE PRESIDENT - SALES
CAMAX SYSTEMS, INC.
7225 CHMS LANE
MINNEAPOLIS, MN 55435

PROGRAMMER
ANALYST

We are seeking someone with broad experience using COBOL, CICS, ICFP and DBMS on a 4300 under DOS/VSE. This career position requires ability to define, code, install, test, document and explain computer applications. We offer a small shop environment, challenging work, 5th generation technology and a competitive salary and benefits package. If you have the experience and are interested, send your resume including salary history to: Ronald G. Sutton, V.P., MURRY'S STEAKS, INC., 8300 Pennsylvania Ave., P.O. Box 398, Forestville, MD 20747-0398, EOE, M/F.

DALLAS
Systems Software
Programmer

New MIS installation, 4341 MVS, setting up SNA, suburban location, outstanding benefits. Full interview, ref. & fee paid. To low \$40K! Requires strong background in MVS, desire to be on ground floor to build for the 80's. Position needed to be filled yesterday, so make haste to contact us!

2720 Stemmons Frey, 1207F
Dallas, TX 75207 (214) 637-6360

**DATA PROCESSING
CAREERS**

CONSULTING ASSIGNMENTS
Long Term High Rates
Application Programmers
ACP/PARS IMS/COBOL

Send resume to:
Computer Software Consultants
1100 17th Street N.W.
Suite 1000
Washington, DC 20036
(202) 466-2938
(703) 751-6136

HIRING?

More computer people read Computerworld than any other newspaper in the United States - more than half a million computer people every week. And, among our 529,650 readers at user organizations about half claim to look at recruitment ads at least every other week (only a small percentage say they never look at recruitment ads). No wonder Computerworld carries more recruitment ads for computer people than any other publication. To place your ad or to get a rate card with complete details on Computerworld Classifieds, call or write:

Classified Advertising
Computerworld

Box 880
Framingham, MA 01701

617-879-0700

1-800-343-6474

position announcements

position announcements

position announcements

position announcements

position announcements

VIDEOTEX OPERATIONS MANAGER

Our San Francisco based client has an outstanding opportunity for a "Seasoned Professional" with a general background in Data Center Operations, Networking, and Data Communication Systems. Specific skills should include:

- Proven technical management skills in Data Center Operations and Data Communications.
- An intricate working knowledge of Mini/Micro Computer Hardware and Software (preferably DEC).
- An interest in and exposure to Teletext/Videotex technology.
- The desire to enter into a "start-up" and highly visible career situation.

This position requires an entrepreneur and a self-starter who is motivated by new technology and new challenges. We are consultants to management. For immediate and confidential consideration, please send resume and salary history, to Consultant, Dept. C-536, CW-B4170, Computerworld, Box 880, Framingham, MA 01701.

Employer assumes fee

LEAD PROGRAMMER, OPERATING SYSTEMS DEVELOPMENT - Computerworld Corporation, a design and manufacturing leader in the rapidly growing field of mini-computer based interactive graphic systems for major industries, has an immediate need for a highly skilled Programmer to (1) enhance existing operating system software to improve the multi-programming environment and provide greater flexibility in configuration management, (2) provide a single system environment to run on a multi-processor architecture which includes developing power fail restart capabilities, configuration system generation and operating system initiation for a multiprocessor architecture (3) support and maintain existing 16-bit operating systems products, and (4) design and implement a disc I/O system and develop a disc based file management system. Minimum requirements include a Master's degree in Computer Science or Mathematics, together with at least two years relevant experience involving (1) low level operating systems development, (2) machine level programming, (3) development of multi-user time shared operating systems for minicomputers, and (4) low level debugging techniques. Also required is a working knowledge of high level systems programming languages such as Pascal, and Assembly language, and a demonstrated understanding of disc management techniques. Starting salary is \$34,100 per year for a five day, forty-hour work week and includes medical, life and disability insurances, two weeks annual vacation and other industry-competitive benefits. Qualified applicants respond with resume to: CW-B4162, Computerworld, Box 880, Framingham, MA 01701.

Manufacturing Applications Manager

As the established leader in the software age, Cullinet is applying innovative software solutions to the implementation of workable, company-wide computer strategies. Cullinet will continue to revolutionize the industry through the development and application of creative software concepts. If you would like to apply your talent in an environment that supports innovation, you will want to explore this exceptional opportunity at Cullinet.

In this key role, the successful candidate will act as liaison between documentation and the field force, and function as internal consultant, providing feedback to product marketing. This position involves 30% national travel and some staffing responsibilities.

To qualify for this opportunity, you must possess an in-depth understanding of manufacturing and its relationship with software systems, and some vendor experience. In addition, you should be a highly-motivated and flexible professional with a strong marketing orientation.

For prompt and confidential consideration, send resume with salary history and requirements to Roy Evarts, Employment Manager, Dept. CW530, Cullinet, 400 Blue Hill Drive, Westwood, MA 02090.

An Equal Opportunity Employer

Cullinet

The solution is software ... and software is Cullinet.

MANAGEMENT INFORMATION SYSTEMS

AMERICAN ELECTRIC POWER, operating an integrated system of electric power companies that currently serve more than seven million people, is a leading energy supplier to seven East-Central states, as well as one of the nation's largest investor-owned electric utility systems.

We are currently seeking highly motivated professionals to contribute to the development of major corporate-level Management Information Systems. Application areas include: finance, accounting, rates, corporate model, fuel supply and decision support.

Qualified candidates will have a bachelor's or graduate degree in Computer Science, Math, Management Science or related discipline. A strong background in project management, systems analysis, application design or program development is essential. Technical proficiency with OS/MVS, CICS, COBOL, PL/I, ROSCOE and data base design is highly desirable.

We offer salaries commensurate with experience and education, plus a comprehensive benefits package. If you are seeking real professional involvement, recognition and opportunity, please send your resume, including salary history and requirements, in confidence to:



Diana Mackey — Dept. 92
**AMERICAN ELECTRIC POWER
SERVICE CORPORATION**
1 Riverside Plaza • Columbus, Ohio 43215
An Equal Opportunity Employer M/F/H/V

NEW HAMPSHIRE MASS/CONN

\$25 - \$60K

Applications and
Systems Software
Micro/Mini/Mainframe



Management
Advisory Services Inc.

Colonial Office Park
48 Constitution Drive
Bedford, NH 03102
(603) 472-8844

Fees and relocation
expenses company paid.

SR SYS CONSULTANT

Fortune 500 mfg offers challenging opp for analyst w/5+ yrs exp on med to lg IBM to sup at corp hdqrs. Must have COBOL, PL/I, strong communication skills & exp w/DB, OS and/or VSAM. On-line & DB a +.

Salary \$28-34K
FEE PAID (513) 224-0800



ROBERT HALF
OF DAYTON, INC.
ONE FIRST NATIONAL PLAZA
DAYTON, OH 45402
Lic. DAPC Member

Software Professionals

APPLIED DATA RESEARCH, the world's oldest and largest independent systems software products company, is seeking software professionals for employment in Dallas or Princeton with experience in one or more of the following:

Software Development

- IBM systems software development using IBM Assembler and Macro Language
- Personal/Micro Computer software development using 'C' language
- Data Base/Data Communications software development

Software Support

- Systems software positions available for both entry level and experienced in software product support.

For confidential consideration send a resume, including salary requirements, to Mr. E.D. Smith, Director of Technical Recruiting, **APPLIED DATA RESEARCH, INC.**, Route 206 & Orchard Rd., CN-8, Princeton, NJ 08540.



**APPLIED
DATA
RESEARCH**

An equal opportunity employer

position announcements

position announcements

position announcements

position announcements

position announcements

A DECADE OF PROGRESS... YEARS OF GROWTH AHEAD

SALLIE MAE

Over the past ten years, our stockholder-owned corporation has experienced rapid growth in providing a national secondary market for banks, thrift institutions, state agencies, and other organizations, that make insured student loans. In the recently completed fiscal year, Sallie Mae's earnings grew more than 100% and assets increased 33%. The outlook for the future is one of continued growth.

Now, we invite you to grow with us. We have immediate career opportunities available for the following experienced data processing professionals:

MANAGER, SYSTEMS DEVELOPMENT

Requires at least 2-3 years managing the development and support of financial and statistical models using FORTRAN, COBOL, and packaged systems such as SAS and other non-procedural end-user languages. In addition, 5-6 years systems development experience is essential. Requirements include an undergraduate degree and experience in operations research, econometrics, or mathematics.

SENIOR PROGRAMMER ANALYSTS

Requires at least 2-8 years experience in developing large-scale IBM applications using JCL, TSO/SPF, VSAM and structured design and coding in COBOL for IMS or CICS. Experience in developing financial applications is a plus. An undergraduate degree in Computer Science or related field is preferred.

Sallie Mae offers proven professionals an attractive career package: excellent salaries, comprehensive benefits, and 100% tuition reimbursement. If you would like to learn how you can grow with Sallie Mae, call David Uhly COLLECT at 202-298-2564, or send your resume, including salary history, to his attention at:

SallieMae

Student Loan Marketing Association
1050 Thomas Jefferson St., N.W.
Washington, D.C. 20007

An Equal Opportunity Employer
M/F/H/V. PRINCIPALS ONLY.

SENIOR PROGRAMMER/ANALYST

If you are a Senior Programmer/Analyst who would like the opportunity to work in a state-of-the-art environment, then investigate Cutler-Williams. As one of the nation's leading computer software service companies, Cutler-Williams can offer you the critical differences that give you pride in performance.

Multiple positions are available in metropolitan Detroit and its suburbs as well as nationwide for professionals with 3 or more years experience in:

- IMS DB/DC and/or CICS using PL/1 or COBOL
- ON-LINE DATA BASE EXPERIENCE
- PL/1, MULTICS
- HP 3000 using IMAGE and QUERY.

Selected candidates will earn a top salary with paid overtime. Additionally, Cutler-Williams protects its employees through paid medical, dental, life and long-term disability insurance.

For more information, call or send your resume to:



JOHN A. ROEMER
CUTLER-WILLIAMS INC.
1610 PARKLANE TOWERS EAST
DEARBORN, MICHIGAN 48126
(313) 336-8900

IDAHO

Idaho Power Company has an immediate opening for a Systems Analyst in its Customer Service System support group. The position requires an appropriate college degree and a minimum of four years programming and design experience. Good business communication, project leadership, and problem solving skills are required. Familiarity with utility customer service and accounting operations is highly desirable. Experience in an IBM 370 DOS/VSE, DL/1 CICS is preferred.

This position is located at the Idaho Power Corporate Headquarters in Boise, Idaho and provides opportunities to combine a career in a progressive environment with the excellent living conditions and recreation available in Idaho.

Send Resume and Salary Requirements to:

Mr. John C. Dominick
Idaho Power Company
P.O. Box 70
Boise, Idaho 83707

An Equal Opportunity Employer M/F

ASSISTANT DIRECTOR COMPUTING SERVICES WEBER STATE COLLEGE OGDEN, UTAH

Primary responsibility includes coordination of the administrative systems and computer operation activities of a centralized computer utility charged with providing major computing support to eight colleges across the state of Utah. The successful candidate will have a proven 5 year track record of systems implementation management experience in an on-line, multi-site computer network and will be experienced in project management, systems planning, and an effective communicator at all levels of management. Masters Degree preferred, Bachelors Degree required in Computer Science or related field. Excellent salary and benefits package. Application deadline June 20, 1983. Send letter of application, resume, salary history and three letters of reference to: Norman A. Wismer, c/o Personnel Department-1016, Weber State College, Ogden, Utah 84408.

WSC is an Affirmative Action/
Equal Opportunity Employer.

DIRECTOR OF DATA PROCESSING

Large organization with varied data processing requirements is seeking highly experienced manager to coordinate all data processing functions. Duties will include coordination of systems development, long and short range planning, development of user responsive data processing services, approval and coordination of hardware and software purchases and direct management of 170+ data center & systems development staff. Must be able to work well with senior executives of various organizational units to meet their needs and allocate resources among competing requirements. Candidates should have at least 10 years experience in data processing of which at least 5 must be administrative. Must have worked with large scale systems using hardware comparable to an IBM 3000 series. Familiar with distributed processing systems containing RJE, MINIS and micro computers and have thorough knowledge of state-of-the-art technology including data base management, network design, on-line communications, project control and management.

Master's degree in related field or equivalent training desirable. Compensation up to \$63,000/yr depending upon qualifications. EOE M/F.

Reply to CW-84171
Computerworld
Box 880
Framingham, MA 01701

SUNNY SOUTH!

If you would like the most individualized career search available, and have at least 2 years of experience, we have some exciting opportunities for:

- CICS Programmers
- Systems - Technical Support
- COBOL Applications Programmers

Client companies pay our fees. Send your resume, in confidence, to:

SEARCH E.D.P., INC.



13773 N. Central Expwy.
Suite 1305
Dallas, Texas 75243
(214) 783-1018

EDP Personnel Consultants
Affiliates Nationwide

VICE-PRESIDENT

MICRO-COMPUTER/WORD PROCESSING
INDUSTRY

A rapidly growing software publishing and marketing company located in the Northeast is in need of a polished executive to assume the responsibility of V.P. Marketing. The candidate will be responsible for contributing to a market strategy that would target the OEM, End-User, and Dealer/Distributor market place. The candidate should be a good communicator, have good interpersonal skills, and should be able to "roll up his/her shirt sleeves and get into the trenches." Software is mandatory, micro-computer and/or word processing is a plus. This individual will report to the President. Total Compensation package is substantial with numerous incentives. To inquire about this position write to:

Reply to CW-84181
Computerworld
Box 880
Framingham, MA 01701

SOUTHERN OPPORTUNITIES

P/A Bking COBOL OS/Batch\$27K
S/A FORTRAN or ASMM Mins\$28K
P/A RPG II and COBOL Sys 38\$25K
P/A COBOL CICS Lile Ins\$32K
CICS S/P MVS COBOL/ASMM\$35K
Sr CICS Sys Prog DOS/VSE SHAB32K
Sr Prog HP 3000 COBOL RPG + \$27K
IMS DB COBOL Saud Arabia \$ OPEN



ROBERT HALF
OF LOUISIANA, INC
P.O. Box 57629
New Orleans, LA 70157
(504) 635-4286

EMPLOYMENT SERVICE FOR PROGRAMMERS AND ANALYSTS

National Openings With Client Companies
and Through Affiliated Agencies

Scientific and commercial applications • Software development and systems programming • Telecommunications • Control systems • Computer engineering • Computer marketing and support

Call or send resume or rough notes of objectives, salary location restrictions education and experience (including computers, models, operating systems and languages) to either one of our locations. Our client companies pay all of our fees. We guide you decide

RSVP SERVICES, Dept. C
Suite 700, One Cherry Hill Mall
Cherry Hill, New Jersey 08002
(609) 667-4488

RSVP SERVICES, Dept. C
Suite 211, Dublin Hall
1777 Walton Rd., Blue Bell, PA 19422
(215) 629-0595

From outside New Jersey, call toll-free 800-222-0153

RSVP SERVICES

Employment Agents for Computer Professionals

PROGRAMMER/ANALYST

Applicant should have three years COBOL experience in an NCR-IRX environment. Insurance background helpful.

Competitive salary and excellent company benefits. Send resume and salary history to:

Personnel Manager
P.O. Box 40198
Jacksonville, FL 32203

ANALYST/PROGRAMMER

To work in Fargo, N.Dak. manufacturing plant. This person will be the key individual in the department and will be responsible for the development and operation of an IBM-38 computer system for our manufacturing operation. Minimum of 1 year experience in an IBM environment with MAPICS or manufacturing software and a Computer Science Degree. For confidential consideration send resume to:

Personnel Dept.
General Nutrition Mills
P.O. Box 349
Fargo, ND 58107.

UNIX/C

\$25,000 to \$50,000
APPLICATIONS & SYSTEMS
Over 300 Openings Nationwide

Client co's pay all fees

Call or send resume

in confidence to:

J. ROGERS ASSOC

(609) 771-8282

2999 Princeton Pike, Dept C-D
Lawrenceville, NJ 08648

PROGRAMMER

Large manufacturing plant in Kansas City area seeking an experienced Programmer. Desired qualifications include Computer Science degree with experience in OS/VS1, CICS command level, PL1 and VSAM. Comprehensive benefits package.

Reply to CW-84107
Computerworld
Box 880
Framingham, MA 01701

TIRED OF THE FAST LANE? TRY ACADEMIA

Small independent suburban college with growing computer science (200 students) and graduate (100 students) programs seeks two computer scientists to bring real world into newly funded programs in Information Systems Management. Both a graduate and an undergraduate professor are sought to develop and teach these programs. Preference given to PhD in computer science or systems design. Experience or education in management and/or software systems design and development desirable. Send vitae to: Homer Easley Chairman Computer Science Dept., Aurora College, Aurora, IL 60006. Application deadline June 30, 1983. An EO/AA employer.

MOBILE PROGRAMMERS IMS or CICS

IMS Database or CICS experience...we supply personnel for several large consulting firms nationwide mostly eastern seaboard. IMS and CICS is needed now...take this opportunity to build on your experience and salary.

Executive Consultants
1600 Fairfield, Suite 410
Shreveport, LA 71101
(318) 222-1000

CLASSIFIED ADVERTISING ORDER FORM

Computerworld's Classifieds work.

Issue Date: Ad closing is every Friday, 10 days prior to issue date.

Sections: Please be sure to specify the section you want: Time and Services, Software for Sale, Position Announcements and Buy/Sell/Swap. (Available upon request: Software Wanted, Turn-key Systems and Real Estate.)

Copy: We'll typeset your ad at no extra charge. Please attach CLEAN typewritten copy. Figure about 25 words to a column inch, not including headlines.

Cost: Our rates are \$112.70 per column inch. (A column is 2" wide.) Minimum size is two column inches (2" wide by 2" deep) and costs \$225.40 per insertion. Extra space is available in half-inch increments and costs \$56.35. Box numbers are \$15.00 extra.

Billing: If you're a first-time advertiser, (or if you have not established an account with us), WE MUST HAVE YOUR PAYMENT IN ADVANCE.

Ad size desired: _____ columns wide by _____ inches deep.

Issue Date(s): _____

Section: _____

Signature: _____

Name: _____

Company: _____

Address: _____

Telephone: _____

Send this form to:
CLASSIFIED ADVERTISING, COMPUTE WORLD
375 Cochituate Road, Box 880, Framingham, MA 01701

position announcements

position announcements

position announcements

position announcements

position announcements

BANKING HOGAN SOFTWARE I.D.M.S.

Come, grow with us! CTG is still expanding - Now over 1000 staff members with branch offices in 20 locations - We are still growing - are you?

If you have at least 5 years experience in any of the above and need a new challenge, CTG may be your answer.

Invest some time - talk with the leaders - rush resume with preferred locations, today, to:

John DeDeyn
Computer Task Group
800 Delaware Avenue, Buffalo, New York 14209



No employment agencies, please... CTG is not an employment agency.
EQUAL OPPORTUNITY EMPLOYER M/F

DATA PROCESSING

E. R. Carpenter Co., Inc. is the world's largest producer of comfort cushioning materials. The growth we continue to enjoy is firmly based on superior technology, quality products and service to our customers. The EDP staff, located at the Corporate Headquarters, is expanding to better answer our present and future needs. IBM 4331 DOS/VSE serves as our main frame. DEC VAX 750 systems are now being installed in all outlying locations. COBOL is the primary language.

We seek individuals for the following key positions:

- **Data Center Manager**—Minimum of 8 years experience managing and scheduling all production activities associated with computer operations. College degree required. Experience with problem tracking, analyzing production trends, reviewing new project impact and short and long range planning a plus.
- **Vax Technical Support**—Minimum of 4 years experience, 2 years on DEC VAX 750 hardware, VMS operating system. Duties to include Systems Support and Contract Administration. College degree preferred.
- **Systems Analyst Manager**—10 years managerial experience analyzing and defining both manufacturing and financial business problems. College degree required. MBA a plus. Exposure on both IBM main frames CICS, COBOL and DEC computers.
- **Systems Analyst**—5 years analyzing and defining business problems in both manufacturing and financial environments. College degree required. Should have exposure on both IBM main frames CICS, COBOL and DEC computers.
- **Programmer Analysts**—with a minimum of 3 years design and coding experience in either financial (A/R, A/P, G/L) or manufacturing applications. A Bachelors Degree is desired and CICS experience is required.
- **Programmers**—2 years experience in financial and manufacturing applications. You must have good COBOL skills.

If you seek a challenging and rewarding position in an exceptional location, please send your resume (with salary history) to the following address. All replies confidential.

Jim Collier, Sr. Employment Coordinator
E. R. CARPENTER COMPANY, INC.
P.O. Box 27205, Richmond, Va. 23261



"World's Largest Manufacturer of
Comfort Cushioning Products"
Equal Opportunity Employers m/f

YOUR ULTIMATE CHOICE

DATA BASE ANALYSTS...Join this team of IBM experts as you design and develop the latest of data base packages. IMS or Model 204 expertise\$55,000
INTERNALS SPECIALISTS...Join this prestigious software firm and use MVS internals experience to go out and solve client problems.....\$45,000
TELECOMMUNICATIONS SPECIALIST...You'll have the opportunity to consult on the most recent developments in voice and data communications\$50,000

For additional information, call J. Schneider at (713) 784-3880.

ALL FEES ASSUMED BY CLIENT COMPANIES.
M. DAVID LOWE PERSONNEL SERVICES
8117 Richmond Avenue
Houston, Texas 77057

Avenues for Achievement

Ford Aerospace can open doors, clear pathways, for the Computer Professional seeking excitement and enlightenment. With 25 years of phenomenal success behind us, and unlimited imagination ahead, ours is an ideal environment. Come design and develop hardware and software systems, new applications and communications protocols (appropriate degree required). And find your future at the frontline of technology. With Ford.

Sr. Electrical Engineer

Microcomputer systems analyst to develop hardware and software for microprocessors and peripherals such as CRT's and Printers, with the ability to understand circuit design, computer architectures and development of interface hardware.

Compiler Writer

Design advanced software development tools and methodologies and have experience in writing high order language compilers. MS in Computer Science is desired and some experience with VAX 11/780.

CAE Librarian

Design, develop, implement and maintain the device library for CAE/CAM. Candidates must have a thorough knowledge of the mechanical/physical aspects of electronic components and related hardware, plus actual CAD design experience.

Software Quality Assurance Analyst — IBM Business Applications

Establish and administer a systems quality assurance program. Develop standards/guidelines for systems design, programming, testing, documentation and operation for quality software development and conformity to corporate requirements. Five years minimum experience in systems analysis project management, programming and operations.

Sr. Programmer/Analyst

Project Leader to develop and implement major manufacturing and material systems. Candidates must have directly related programming experience and excellent communication skills.

Sr. Data Analyst

Develop Corporate Logical Data Plan and each system's logical and physical data views. Candidates must have a minimum of three to five years experience in the areas of Data Dictionary usage, top down design, user view synthesis, entity analysis and normalized and logical data base design. Excellent written and verbal communication skills are mandatory in this position.

Sr. Systems Analysts

Major scientific projects have created a need for Sr. Systems Programmers/Analysts. All positions require an appropriate degree and directly related systems programming experience. Computer Systems: VAX 11/780 (VMS), Honeywell DPS 8/70 (GECOS), IBM 3033/4341 (MVS), PRIME 559/750 (PRIMOS).

Software Specialist — IBM Business Systems

Responsible for the evaluation of IBM operating, communications and support software including analyses and resolutions of software problems. Provide technical support to data management, application design and programming personnel. Develop and/or evaluate systems and communication software/hardware proposals. A minimum of 5 years IBM experience required.

Data Communications Engineer

Assist with the development of Divisional network systems plan; design and install data communications networks. Position requires a technical degree and experience with communication hardware and protocols; familiarity with ISO and ANSI standards, including X.25 and knowledge of SNA, DECNET and PRIMENET systems/protocols including SDLC and DDCMP.

Ford Aerospace offers long-term project stability and a comprehensive benefit package — including relocation assistance.

For immediate consideration, please send your resume to: **Marsha Bridges, Professional Placement, Dept. A762-009, Ford Road, Newport Beach, CA 92660, or call 714-720-5869.**



Ford Aerospace & Communications Corp.
Aeronautic Division

U.S. Citizenship Required / An Affirmative Action Employer



300 DP OPENINGS

Mfg Prog/Anal (Mfg apps, MVS/CICS) 25-35K
Bank Prog/Anal (Bank apps, COBOL) 20-29K
Sci/Eng Prog/Anal (Mini/Micro) 25-40K
Prog/Anal (2 yrs DEC PDP 11) 25-31K
Prog/Anal (2 yrs COBOL, UNI 1100) 23-32K
Prog/Anal (2 yrs IMS or CICS) 25-35K
Prog/Anal (2 yrs COBOL, HONEY 66) 25-34K
Prog/Anal (2 yrs HP3000) 25-30K
Prog/Anal, Sys Anal (ACF/PARIS) 26-40K
Sys Anal (3 yrs IMS or CICS) 28-39K
Sys Prog (2 yrs OS or DOS/VSE) 23-39K
Sys Prog (2 yrs IMS or CICS) 27-40K
Sys Prog (UNI 1100/HONEY 66) 26-35K
DEC Sys Prog (PDP 11 or VAX) 25-40K
DEC Software Engr (PDP 11 or VAX) 25-35K
Software Engr (2 yrs 280, 8080) 25-40K
EIP Auditor (2 yrs EDP Audit) 24-32K

In 1982 we were one of the top producers in IPA (150 agencies and 500 consultants). Now we are affiliated with SFC (130 agencies and 500 consultants). All fees and expenses paid.
Rick Young (704) 266-1880
CORPORATE PERSONNEL CONSULTANTS, INC.
3705 Lantana Drive, Suite 310
Charlotte, NC 28211

SYSTEMS AND PROGRAMMING MANAGER

- Do you need to be in a growing environment?
- Do you build positive relationships with your employees?
- Do you get excited when co-workers succeed?
- Do you have the courage to stand up for what's right?
- Do you want a caring management that is interested in you as a person?
- Does your work history include several years of data processing experience and at least one year of successful management?

If this is you, we need you to join our progressive MIS Department with multi-unit IBM systems. We are a Midwest based industry leader in marketing information and research.

This Outstanding Opportunity Offers:

- Excellent salary and benefit package.
- Rewarding advancement opportunities.
- A company you can stay and grow with.

If you are an aggressive, hard-working individual ready to "make a difference" at our company, CALL TODAY for a confidential interview.

CALL: Laura Burkland, Selection Consultant Working With the Company
PHONE: 800-228-4526

Weekdays, 9-5

MAJERS CORPORATION

EEO/M-F

Computer Professionals

Northeast Opportunities

Sr. Engineer-Software To \$56K

Sr. Engineer-Data Systems To \$51K

(incl. w/military systems required)

Supervisor-Systems Engineering & Software To \$40K

Analyst-Systems Software To \$36K

Programmer Analyst To \$25K

If you desire the highest caliber of professional representation, send your resume in complete confidence to Kevin M. Stack, President.

KMS Associates, Inc.

UPO Box 3492, Kingston, NY 12401

914-339-3559

position announcements

position announcements

position announcements

position announcements

position announcements

DIRECTOR OF COMPUTER OPERATIONS

- Founded on Innovation • Advanced through Technology
- Committed to Growth • Challenged by Opportunity

Peer Services, Inc. supplies major national financial institutions with innovative D.P. services, the combined capabilities of skilled banking professionals and advanced computer technologies. We are completing a state-of-the-art IBM Data Center to provide financial software services to our parent organizations from our corporate headquarters in Dallas, Texas.

As a new company with entirely new methods for effective business management, the ground floor opportunities we now offer can provide you with rapid advancement to match our plans for continuing corporate expansion.

We are currently seeking a heavily experienced Director of Computer Operations for our Regional Data Center located in Phoenix, Arizona. Your initial duties will be to manage our client's Data Processing Operations Center and upon completion will establish a Data Processing Center staffed by approximately 80 individuals. You will need 10-12 years data processing experience, with minimum 6 years in operations management is required. Additional experience in:

- Applications and systems programming would be highly desirable.
- Savings and loan, banking or financial applications would be a plus.

In addition to an exciting professional environment, Peer Services offers top level salaries, with incentive plans for outstanding performance. Our top level benefits include comprehensive medical, dental, disability, and life insurance. Please respond with your resume and salary history to the address below. All replies will be held in strictest confidence.

PSI

PEER SERVICES INCORPORATED
Bob Walsh or Mike Handlin
13465 Midway Road
Dallas, Texas 75234
(214) 851-0700

PRINCIPALS ONLY, PLEASE AN EQUAL OPPORTUNITY EMPLOYER, M.F.

ASSOCIATE SYSTEMS ANALYSTS

A major Cleveland area firm has several opportunities in the Northeastern suburbs, as well as downtown.

2 positions require experience in data processing, including COBOL, MVS/JCL, IMS, DB/DC, TSO systems analysis and design, and design of on-line systems applications. Successful candidates should have a job history showing increasing levels of responsibility in systems analysis and possess good communications skills.

Other opportunities exist in the area of program development and the implementation of computer programs or methods. Experience in the analysis of existing practices, procedures, and policies to aid in program development and method improvement is also necessary. Experience on mini-computers, particularly DEC equipment is also desirable. Candidates must be proficient in FORTRAN and COBOL computer languages and have good communications skills and the ability to direct a small development team.

For all positions above, candidates should have a Degree in Computer Science, Business Administration or equivalent experience in the areas above. Salary commensurate with experience. Please forward resumes complete with salary history to:

Reply to CW-B4168
Computerworld
Box 880
Framingham, MA 01701
Equal Opportunity Employer

Sr. Systems Analysts Project Leaders

Our client is a 5-billion dollar southern bank with a national reputation. They need Sr. Systems Analysts with 4-6 years banking experience to assume major project/systems development responsibilities. Knowledge of the Hogan System is a plus.

Our client is located in a most attractive, mid-sized southern city and offers excellent compensation, benefits and relocation assistance.

Call or write: Brian M. Healey, Recruiting Consultant Inc., 101 N. 1st Avenue, Phoenix, AZ 85003, or call (602) 253-0046.

Equal Opportunity Employer

COMPUTER ANALYST/ENGINEER

For operations of MET/solar pond data acquisition system and statistical analysis of data. Design and maintenance of energy data bases. Participate in development of sophisticated models for energy conversion/storage systems. Provide assistance to staff in program optimization and instruct students. Requires BS in computer science or engineering; background in solar and wind energy utilization, knowledge of energy oriented data acquisition, data analysis and data base systems. Experience with the CDC-Cyber 172/730, D6-Novis and Harris 800 operating systems is desirable. Position located in Boulder City, NV. Starting salary \$22,000, full benefit package. Send resume and letter of application, postmarked by June 25, 1983 to Personnel Office, Desert Research Institute, University of Nevada Systems, P.O. Box 90220, Reno, NV 89506. An Affirmative Action Equal Opportunity Employer.

IMMEDIATE OPENING TELECOMMUNICATIONS PROJECT MANAGER

Responsible for all voice/computer data communications technology for Dade County Public Schools district wide. Duties include vendor and equipment selection, installation, maintenance, billing and training. Responsibilities also include the selection and installation of \$10-15 million of new communication equipment over the next 5 years. Will report to the director-management information systems and be located at the MIS computer center.

- 5 week vacation policy
- 12 paid holidays
- and other major benefits

Send resume before June 10, 1983 to:
Dade County Public Schools
MIS Computer Center
Attention: Mr. Gene W. Brewer
13135 SW 28th Street
Miami, FL 33175
Equal Opportunity Employer

THE UNIVERSITY OF NEW MEXICO

The Department of Computer Services and Information Systems has an opening for a Data Base Administrator. Responsibilities will include the management, coordination and control of data in a university wide database, as well as overall database planning. General administrative system experience, plus experience in data administration and the development of data structures for a large scale database, is preferred. At least three years of experience in programming and at least two years of experience in application systems design is required. A Bachelor's Degree is required, and Master's Degree is preferred, but direct experience can be substituted for education on a year to year basis. By June 15, 1983, send a resume and the names of three professional references to:

W.E. Walden
CSIS
University of New Mexico
2701 Campus Blvd., N.E.
Albuquerque, NM 87131

AA/EEO

SENIOR SYSTEMS ANALYST/ DATA BASE MANAGER

(\$35,911 - \$41,574)

(2) PROGRAMMER/ANALYSTS
(\$1,942 - \$2,368 Mo.)

Obtain job descriptions/applications at Personnel, San Jose Community College District, 4750 San Felipe Road, San Jose, CA 95135, (408) 270-6406.

Positions to be filled AS SOON AS POSSIBLE. Send applications and resumes to Personnel Office IMMEDIATELY. EOE.

WASHINGTON, D.C.

HP3000

PROGRAMMER/ANALYSTS

Large office products distributor/retailer has immediate openings for Jr. and Sr. P/A with business background. HP3000 COBOL and IMAGE experience required. Duties include development of programs to convert existing systems to HP3000/64. BASIC, Microdata or PRIME experience desirable. Excellent advancement opportunities. Company benefits include competitive salary, tuition reimbursement, medical/dental insurance. Send resume to:

Blair Tangelman
Greene
5620 Agor Road
Hyattsville, Md 20782

DATA PROCESSING INSTRUCTOR

Arkansas' largest community college is seeking a data processing instructor for a full-time, tenure track position beginning August 19, 1983. Bachelor's degree required. Master's preferred in Business Data Processing Computer Science, or related field. Salary dependent on academic qualifications and experience. Liberal benefits available. To apply, write or call Director of Personnel/EEO, Westark Community College, P.O. Box 3849 Fort Smith, AR 72913. AC 501-785-4241. An Equal Opportunity/Affirmative Action Employer.

WASHINGTON, D.C.

DP MGR WANG

Major MD financial service co. seeks pro to manage DP growth. Musts: WANG VS and BS degree. To 40K.

ROBERT HALF

OF WASHINGTON, INC.
7316 Wisconsin Ave. Ste 401
Washington, D.C. 20014
(301) 652-1960

DEPARTMENT OF MANAGEMENT

Seeking to fill full time teaching position with specialization in Management Information Systems. Will teach a variety of computer related courses. Prefer Doctorate or ABD in Business Administration with a specialty in MIS. Interested persons should apply in writing before July 1, 1983 to: Dr. Russell Jacobson, Department of Management, University of Wisconsin-Whitewater, Whitewater WI 53190. Please include summary of educational background and employment experiences with 3 letters of recommendation and transcripts.

PROGRAMMER. In charge of structuring, coding & debugging systems programs for applications relating to financial institutions. Must have knowledge of COBOL, ASSEMBLER & CICS. 1 yr exp. \$26,500 p.a. to work 37½ hrs/5 days/wk PLEASE SEND RESUMES Software Design Associates, Inc., 71 5th Ave., NY, NY 10003.

CYBERNETICIAN

Develop cybernetic models, research and development of analog computers using Cybernetics as comparative study of the control and intracomputations of information handling machines, computers and data processing devices. \$30,000 per year, 3 years experience in Cybernetics.

CNT Consulting Group
4825 LBJ Freeway
Suite 215
Dallas, TX 75234
Equal Opportunity Employer

PROGRAMMER/ANALYST

Seeking individual for growing company with the following qualifications: S/34 or S/38 preferred experience 5 years coding RPG II or RPG III Good communications skills Able to take charge of projects Challenging position, opportunity to expand knowledge, good benefits. Salary dependent on experience. Send resume, salary requirements and salary history to:

Reply to CW-B4161
Computerworld
Box 880
Framingham, MA 01701

We are currently recruiting for:

Programmers
Programmer Analysts
Systems Programmers
Systems Analysts
Data Base Analysts

If we have not called you yet:

- (1) we do not know who you are;
 - (2) or no one has recommended you yet.
- If you have one year of experience and want to work in N.C., S.C., VA, TN or GA - call one of our D.P. Recruiters collect: Chip Grooms, CPC; Diane Amos, CPC; Jane Green; Brenda Carry or John Bringham "the DP Pros" at Personnel Placement, Inc., Burlington, NC (919) 584-5591.

Our companies pay all fees, interview and relocation expenses.

CAROLINA CAREERS

Many challenging career opportunities available in the sunny Carolinas for systems programmers, systems analysts, programmer analysts, and programmers. All expenses and fees paid by company. For information call Frank Bamhart collect 919-373-1991 or send resume in confidence and let our 16 years EDP placement experience work for you.



REGENCY PERSONNEL
CONSULTANTS
822 N. Elm Street
Greensboro, NC 27401

TANDEM EXPERT

\$50,000

Sunny Florida Location

Send resume to

Ed Simmons

Belle Oaks

Ste. 700, 1125 Grand

Kansas City, MO 64106

(816) 421-7181

Employment Agency



In a bind?

Do you
need real
professionals?
Advertise in
Computerworld
to find
exactly who
you're looking for.
Because...

More computer people
read Computerworld
than any other
newspaper in the
United States--more
than half a million
computer people every
week. And, among our
529,650 readers
at user organizations,
about half claim to
look at recruitment ads
at least every other
week (only a small
percentage say they
never look at
recruitment ads).
No wonder
Computerworld
carries more
recruitment ads for
computer people than
any other publication.

position announcements

position announcements

position announcements

position announcements

position announcements

SYSTEMS CONSULTING

TALENTED
ANALYTICAL
IMPATIENT

THAT'S YOU. FEELING UNCHALLENGED, LOOKING FOR A STIMULATING PROFESSIONAL ENVIRONMENT THAT PUTS YOUR SKILL IN NEW SYSTEMS DEVELOPMENT TO GOOD USE.

WE'RE A WELL-MANAGED CONSULTING FIRM THAT SPECIALIZES IN SOLVING COMPLEX BUSINESS PROBLEMS. WE WORK FOR A BROAD CROSS-SECTION OF THE FORTUNE 200 ON LARGE, NOVEL ASSIGNMENTS.

OUR SYSTEMS STAFF IS INTENSELY INVOLVED IN MIS STRATEGY STUDIES AND IN DESIGN, DEVELOPMENT AND IMPLEMENTATION OF ON-LINE SYSTEMS FOR PRODUCTION PLANNING, INVENTORY CONTROL AND LOGISTICS DECISION SUPPORT. ASSIGNMENTS CHANGE FREQUENTLY AND INCLUDE DIRECT INTERACTION WITH END USERS.

LESS THAN 10 YEARS OLD, OUR FIRM HAS QUICKLY BECOME A RECOGNIZED LEADER IN MANAGEMENT CONSULTING AND SYSTEMS DEVELOPMENT.

TO QUALIFY FOR OUR SYSTEMS STAFF, YOU SHOULD HAVE TOP ANALYTICAL CAPACITY AND 2 to 4 YEARS' OF PROGRESSIVE EXPERIENCE IN SYSTEMS DEVELOPMENT AND IMPLEMENTATION. WE ARE LOOKING FOR A TECHNICAL UNDERGRADUATE DEGREE, PERHAPS WITH A SPECIALTY IN COMPUTER SCIENCE OR OPERATIONS RESEARCH.

PLEASE SEND YOUR RESUME IN STRICT CONFIDENCE TO:

CLEVELAND CONSULTING ASSOCIATES
23925 Commerce Park Road
Cleveland, Ohio 44122

TECHNICAL SUPPORT SUPERVISOR

New Growth/New Potential

We are seeking a talented innovative self-starting Technical Support Supervisor to support our current systems software environment, plan for future software growth and direct a technical staff of systems professionals.

The position reports to the Manager Technical Services and has an important role in the creation of an effective technological framework to support growing operational activities and our aggressive systems development plans.

The ideal candidate will have 2-5 years experience managing or supervising a technical support staff of 2 or more systems programmers. Must possess strong oral and written communication skills as well as strong supervisory skills. Must be technically competent in VM/CMS, DOS/VSE, CICS/VS, Capacity Planning and Computer Performance Measurement Evaluation and tuning. Experience with remote teleprocessing systems and DBMS, preferably IDMS, is a definite plus.

A leader in the life and health insurance industry, we offer an excellent salary, benefits and realistic advancement opportunities inherent in a solid and growing company. For prompt confidential consideration, please forward your resume with salary history or call:

Randel Sanders
TIME INSURANCE

515 W. Wells
Milwaukee, WI 53201
(414) 271-3011

An Equal Opportunity Employer M/F

ATEX SYSTEM OPERATOR

Major Metropolitan Newspaper presently has an opening for an experienced operator on ATEX 7000. Editorial System, Classified Advertising System experience a plus. Ability to communicate and work closely with Editorial, Advertising and Production Personnel. Schedule will include some night and weekend work. Salary \$22K to \$24K dependent upon experience. Opportunity for advancement. Excellent fringe benefits including fully paid Blue Cross-Blue Shield Master Medical Coverage, Life Insurance, Pension and Vacation. Please send resume to:

CW-B4172
Computerworld
Box 880
Framingham, MA 01701

An Equal Opportunity Employer M/F

FIELD ENGINEERING GOLD MEDALISTS.

in:

- Network Products
- Front-end Processors
- DASD
- Large-scale CPUs

When you're the very best, it's obvious. It shows in your performance, your style.

In an Olympic Gold Medalist, it shows in the contribution of a "superstar" to an integrated team. At Amdahl, it shows in each and every individual's contribution to the ultimate in Product Support and Services.

The real superstars at Amdahl are the Field Engineering Specialists in Support Centers and regions across the country. There are times when problems arise in the field that baffle even our front-line support teams. That's when the superstars take over — they go the distance to reach the most evasive solutions.

Our superstars are experts. They know the IBM environment cold — the CPU hardware, or the networks, or the disc drives. They're the best. And it's obvious — to Amdahl customers, and to the rest of the industry.

If it's obvious that you're one of the best, you belong on the Number One team in the industry. You belong at Amdahl.

Don't hesitate to demonstrate the obvious to us. Send your resume to **Amdahl Corporation, Dept. 5-064CW, MS 300, P.O. Box 470, Sunnyvale, CA 94086.** We are an equal opportunity employer through affirmative action.

amdahl
Product Support & Services

PROGRAMMER ANALYST

Leading Florida retailer is looking for an aggressive COBOL Programmer Analyst. Minimum five years experience in new program development required. NCR medium to large scale mainframe experience desired. Knowledge of Cincom TOTAL Data Base and NEAT/3 is a definite plus.

We offer the right individual a progressive growth environment and a competitive compensation package.

Qualifying applicants send resume with salary history today, in complete confidence. (305)625-2681

JByrons

A Jack Eckerd Company

Human Resource Division
15600 Northwest 15th Ave.
Miami, Florida 33169

Equal Opportunity Employer

HP 1000 MANAGER

Highly entrepreneurial co. supporting the financial community has opportunity for experienced manager to oversee its multi-hardware mini-computer installation. The successful candidate should have good mgmt skills in real-time environment and be thoroughly familiar with HP 1000 systems. Current technical skills are required; college degree mandatory. The ability to interface with customers and unravel the complex problems of very sophisticated mini-installation are essential. High profile position reporting to President. Excellent long term growth potential \$48,000 FEE PAID

ROBERT HALF
C/O NEW YORK, N.Y.
522 Fifth Avenue
New York, N.Y. 10036
212-221-6500 (agency)

UNUSUAL OVERSEAS OPPORTUNITY FOR EXPERIENCED T.I. MICROCOMPUTER SPECIALIST

Major Swiss company located in Zurich area requires bi-lingual (American-German) graduate in electrical engineering or computer science to work on new R & D project. Company developing new machine control system. Three-year minimum assignment in Switzerland with option for extension or re-assignment in the U.S. Requires minimum of three years experience in control systems and T.I. Systems, MPP, AMPL, Microprocessors, E-boards and I.C.s. Must be able to work in Basic, Pascal, T.I. Assembler, MPP and Fortran.

Excellent salary with all relocation expenses paid. Send detail resume with salary requirements to:

CW-B4144
Computerworld
Box 880
Framingham, MA 01701

WILD & WONDERFUL WEST VIRGINIA

West Virginia Network for Educational Telecomputing, the statewide computer network for higher education in West Virginia, has the following openings:

(2) IBM LEAD SYSTEMS PROGRAMMERS

Bachelors degree and three years IBM operating systems programming experience or equivalent. Provides supervision and technical assistance to senior level systems programmers. Salary mid 30's

Our hardware consists of: AMDAHL V7A, NASCO ASS, VAX's, PDP-11's
Our software consists of: VM/370 SP1, MVS SP1.3, CICS 1.5, ACF/VTAM, WYLBUR

In the future we intend to upgrade software to ACF/NCP, VM/370 SP2 and a major database system.

The closing date for the positions is June 24, 1983. Send resume to: Personnel Officer, WVNET, 837 Chestnut Ridge RD, Morgantown, WV 26505. Phone: (304) 293-5192. AN EQUAL OPPORTUNITY EMPLOYER

position announcements

position announcements

position announcements

position announcements

position announcements

Put Ford Into Your Future Software Specialists

The Western Development Laboratories Division of Ford Aerospace & Communications Corporation in Palo Alto would like to tell you about immediate opportunities available for you to become part of our exciting team of Software Professionals.

Computer Software Quality Assurance Specialists

These positions require individuals with 5-8 years' experience in software quality assurance, configuration management, requirements analysis/traceability, system test, verification and documentation. Working knowledge of MIL-STDs desired. Excellent communication skills are required to write computer software quality assurance program plans, negotiate budgets, conduct periodic audits, review and approve project documentation, participate in design reviews, structured walk-throughs and test activities.

Bachelor's degree or equivalent in Computer Science, Engineering, or Mathematics required. MS preferred.

Network Software Engineering Specialist

This position is for an individual with ten years' computer communications experience. An excellent background in design and analysis of network protocols such as the DoD IP/TCP protocols or XNS protocols and local area networks is desirable.

PhD or equivalent in Computer Science or Electrical Engineering required.

U.S. citizenship required. The successful candidates may be required to undergo a background investigation.

You can count on us to provide an excellent compensation package including comprehensive benefits. For consideration, call Caroline Nabeta COLLECT at (415) 852-4962 or send a letter/resume to Professional Employment, Dept. CN-41, 3939 Fabian Way, Palo Alto, CA 94303. An equal opportunity employer.



**Ford Aerospace &
Communications Corp.**

Western Development Laboratories Division

COMPUTER - Berea College is seeking a Systems Analyst/part-time instructor. Qualified individuals will be experienced in state-of-the-art design and implementation of computer information systems, and conversant with trends in automating management. Duties will primarily be in system design, managing student programmers, and teaching a course. A Master's degree in a computer related area is required. Candidates with experience in COBOL and PRIME hardware will be given preference. Berea College is a Christian, liberal arts college of 1550 students and actively seeks applications from minorities and both sexes. Applicants for the position should provide a resume, statement of interest, and the names of at least two references to: Director of the Computer Center, CPO 2293, Berea College, Berea, KY 40404.

MANAGER TEXT PROCESSING SERVICE BRADLEY UNIVERSITY

Manage daily activities of the university's UNIX-based text processing center. Bachelor's degree and experience with UNIX operating system preferred, with 2 to 4 years experience in text processing or related area, including supervisory experience. Competitive salary, plus university benefits. Send resume and references to: Joel L. Hartman, Center for Learning Resources, Bradley University, 1501 W. Bradley, Peoria, IL 61625. Position open until filled. An Equal Opportunity/Affirmative Action Employer.

UNIVERSITY OF EVANSVILLE

Two tenure track appointments involving undergraduate and graduate teaching in small, private, residential, regional university are available for September 1983. Ph.D. in computer-related discipline required for associate professor appointment. Previous teaching experience is required and business applications experience is preferred. Outstanding undergraduate applied computer science program serving 300 students and innovative teacher-oriented masters programs are housed in the School of Engineering and Applied Science. Competitive 9-month salary in attractive urban location. Excellent opportunities for supplemental compensation and for off campus assignments. Contact Dr. William Mitchell, Chairman, Department of Computing Science, P.O. Box 329, Evansville, IN 47702 by June 15, 1983. AA/ECE

OPERATIONS ANALYST

VWR SCIENTIFIC, INC., located in Bri-shane is one of the largest distributors of scientific and graphic arts equipment and supplies.

We are looking for an individual with 3 years experience in an OS environment and is proficient in IBM, JCL and Utilities. TSO/SPF knowledge is required and VSAM is preferred.

Our offer includes a good salary and a generous benefits package. Send resume to Personnel/OAC P.O. Box 7900, S.F., CA 94120. EOE M/F/H/V Principals only, Please.

VWR Scientific Inc.
subsidiary of Univar

PROGRAMMER ANALYST

Professional position requires 3 years full-time experience at least one of which must have included systems design work in an on-line environment. Solid COBOL experience required. College degree preferred but can be offset with additional experience. Knowledge of governmental financial applications, RPG II or WANG VS System or similar Supermini plus. Salary \$24,636-29,952 a year. Recruitment will remain open until the position has been filled.

**CITY OF FAIRFIELD
PERSONNEL OFFICE
1000 WEBSTER STREET
FAIRFIELD, CA 94533
(707) 426-5500, Ext. 3096
Equal Opportunity Employer**

COMPUTER SYSTEMS ENGINEER

SEARCH REOPENED
Performs and supervises hardware, software and telecommunications analysis, facilities planning and systems performance evaluation for Administrative Data Processing. Develop plans and programs, and directs the operations and production branches of Administrative Data Processing. Acts as point of contact with vendors engineers regarding problems in operations, maintenance or modification of University HP 3000 computer system. Applicants should have extensive HP 3000 experience with 2 years background in SPL, FORTRAN/3000, and BASIC/3000. Reports to Director of Administrative Data Processing. Salary range \$23,761 to \$25,971. Submit cover letter and resume by June 10, 1983 to Personnel Office, George Mason University, 4400 University Drive, Fairfax, VA 22030. AA/ECE

COMPUTERWORLD CLASSIFIEDS WORK!

- POSITION ANNOUNCEMENTS
- TIME & SERVICES
- BUSINESS OPPORTUNITIES
- SEMINARS/CONFERENCES

- BUY SELL SWAP
- SOFTWARE
- REAL ESTATE
- SOFTWARE WANTED
- BIDS AND PROPOSALS

It's easy to advertise in COMPUTERWORLD. If you don't have an advertising agency to supply us with copy, layout and order, or camera ready mechanical, stat or film negative of your ad, just call one of our ad-takers at 1-800-343-6474. They will be glad to take your ad and typeset it in available fonts at no extra charge. If you have lengthy ads that require logos and artwork, just send a clean typewritten copy of your ad to the classified advertising department at COMPUTERWORLD (telecopier service is available); note the ad size you want; and, if you want your company logo to appear in your ad, please be sure to include a camera-ready copy with your insertion order. You should also supply any special borders, headlines and artwork that you want in your ad. Our Art Department will follow your suggested layout as closely as possible if you wish to send one.

Ad closing is every Friday, 6 working days prior to issue date.

To reserve space for your ad, or if you'd like more information on Classified advertising in COMPUTERWORLD, call our office nearest you.

Boston - (617)879-0700
Chicago - (312)827-4433

New York - (201)967-1350
San Francisco - (415)421-7330
Los Angeles - (714)556-6480

William J. Mills, Manager Classified Advertising



COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

BUY•SELL•SWAP

BUY
SELL • LEASE

DISK

3340 • 3344

3350 • 3380

TAPE

3411 • 3410

3420

Call Bob Ford
or Nelson Johnson

S/38

S/34

S/3

SERIES/1

Call Gayle Drotar
Roger Odom
Ken Winzen

370 Systems

4341 • 4331

3031 • 3032

3033 • 3081

Call Jack Harvey
or John Bottom

NEED TO REDUCE EXPENSES?

**ECONOCOM'S
PURCHASE-LEASEBACK
PROGRAM CAN PRODUCE
IMMEDIATE SAVINGS ON
YOUR PRESENT
EQUIPMENT—CALL FOR
DETAILS.**



ECONOCOM

845 Crossover Lane
P.O. Box 240297
Memphis, Tennessee 38124

901-767-9130

Member
National Computer Leasing Association

We Buy & Sell

DEC

Systems
Components

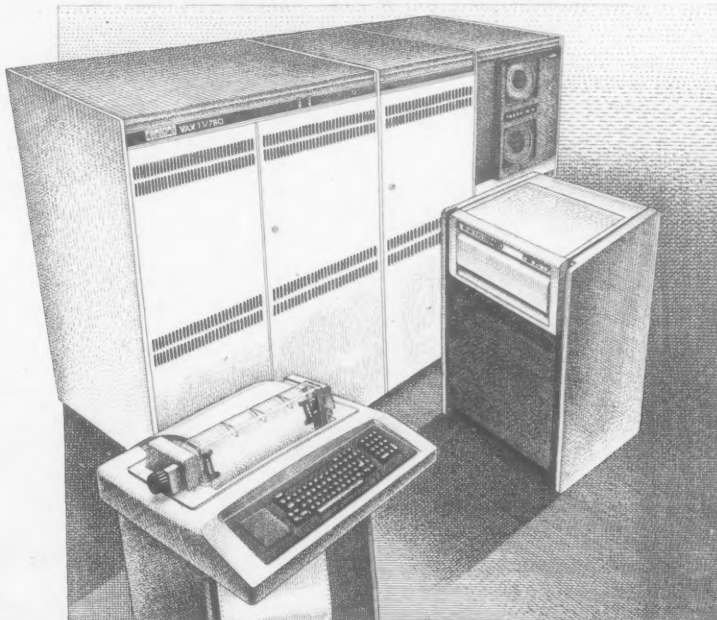
call: 713

445-0082

Digital
Computer
Resale

600 Kendrick Ste C22
Houston, TX 77060

RM03/TU77 based VAX-11/780 system



Factory-refurbished and warranted equipment from Digital.

When you buy your used systems directly from us, you get a full 90-day warranty, the exact same one as on new equipment.

And, your equipment is tested, debugged, and made to look new by the same experienced people who built it in the first place.

Call 1-800-258-1728.

In New Hampshire, (603) 884-7240
Digital Equipment Corporation
Traditional Products, 16 Hampshire
Drive, Hudson, NH 03051.

digital

Inflation Fighters

Quality & Savings

Slightly used. Money Back Guarantee.
Full Reels. All External Labels Removed.
Guaranteed for use at 800 BPI through
6250 BPI.

2400' Reel \$4.95 ea.
1200' Reel \$4.25 ea.
600' Reel \$3.50 ea.

All Tapes with Hanging Seals
We pay freight on orders over 200 tapes.
All orders shipped within 48 hours.
Call or Write

Computer Tape Mart
44A Seabro Avenue
N. Amityville, New York 11701
[516] 842-8512

3270 Equipment

Lease Or Sale

3278 Mod 2 CRTs
3277 Mod 2 CRTs
3277 Mod 1 CRTs
3287 CO2 Printers
3274 Controllers
(All Models)

3276 Mod 2, 12 Controllers

5280 Equipment

New From IBM

Save 15%

Compared To IBM Rental

30 Day Delivery

Contact Diane Prestigomo

Leasing Dynamics, Inc.
1717 East Ninth Street
Cleveland, OH 44114
(216) 887-0100

BURROUGHS 6810

BURROUGHS 2930

BURROUGHS 1955

BURROUGHS 4800



2480 W Alameda Ave
Denver Colorado 80223
303-922-8331
Telex 910-931-0483

Member
National Computer Leasing Association

AMERICA'S LEADER IN BURROUGHS EQUIPMENT

NOW OFFERS

OVER \$2,000,000

IN OWNED

BURROUGHS EQUIPMENT
FOR IMMEDIATE DELIVERY
B1800 - B7800

ALL MEMORY, DISK, TAPE,
MT's, TD's, PRINTERS

GUARANTEED BURROUGHS
MAINTENANCE

602-264-5151



COMPUTER MARKETING CORPORATION
5051 NORTH SEVENTH STREET
PHOENIX, ARIZONA 85014
TEL 165-712

MEMBER COMPUTER DEALERS & PROGRAM ASSOCIATION

buy	sell	swap	buy	sell	swap	buy	sell	swap	buy	sell	swap	buy	sell	swap
-----	------	------	-----	------	------	-----	------	------	-----	------	------	-----	------	------

**If we
can't get it,
it can't be got!**

The Total Computer Company...

- Flexible lease terms.
- Purchase lease-backs.
- Equipment for sale.
- Maintenance service contracts.
- Substantial inventory available.
- Refurbishing & reconfiguration by our own staff.
- Data center relocations & installations.
- Custom software design.

Available Immediately...

IBM Mainframes		
4341	3033	
4331	3031	
IBM Peripherals		
3350	3420	3525
3375	3203	3278
3380	3211	3274
3880	3811	3276
3803	3505	3287

Hartford Computer Group
515 East Golf Road, Arlington Heights, IL 60005
800-323-6355
or 312-364-0505

NEW IBM CPU'S & PERIPHERALS **SAVE**

System 38, Series 1
CRT'S: 5291, 5251
PRINTERS: 5224, 5219

- Shipped Direct From IBM
- Full IBM Support
- Discounted Below IBM

CARLYN
COMPUTER SYSTEMS, INC.
(703) 642-1950

DEC DISK Immediate Delivery

RL02 RP06
RM02 RP07
RM03 RK06
RM05 RK07

Call (617) 437-1100

American Computer Group, Inc.
P.O. Box 68, Kenmore Station,
Boston, Mass. 02215

FOR SALE 4 SERIES 1 4952

SOME STILL IN ORIGINAL CARTONS

Please Contact:
Steve Nezer

Wm. Filene's & Sons
426 Washington St.
Boston, MA 02101

(617) 357-2819

DEC DATASTAR INC. DEC INVENTORY CLEARANCE ***** THIS WEEK'S SPECIAL

VAX 11/780, 1MB, H9602,

DZ11 A, LA 120,

414MB Disk, 125 IPS Tape

\$189,000

(8) DZ11-A	\$2150	PDP11 45 IPS	\$6495
DZ11-B	\$1495	PDP11 75 IPS	\$7595
DZ11-C	\$2150	PDP11 125 IPS	\$8495
DZ11-D	\$1495	PDP11 300 MB	\$13,995
TWE16	\$9995	PDP11 160MB	\$7495
PRO 350, 5MB	\$7995	PDP11 414MB	\$15,745

23461 RIDGE ROUTE SUITE #H, LAGUNA HILLS, CA 92653

714-859-7880

ABOVE EQUIPMENT CASH WITH ORDER

IBM UNIT RECORD EQUIPMENT & DISK DRIVES DISK PACKS, DATA MODULES, MAG. TAPE, DISKETTES



SALE OR LEASE

machines

026-029-082-083-084
085-087-088-129-514
519-548-557-3330-3340



disk packs

2316-3336(1)-3336(11)-3348(70)

5 MEG. TO 300 MEG. PACKS-NEW & USED

Highest Prices Paid for Used Packs & Machines



THOMAS COMPUTER CORPORATION

5633 W. Howard St. Chicago, IL 60648

800-621-3906 312-647-0880

Authorized Distributor—Memorex, CDC, 3M, BASF, Verbatim

3350 A2-B2
Want to Purchase
Please Call Carol:
CSU INDUSTRIES, Inc.
516-239-4310

MEMORY BOARDS

NEW COMPATIBLE WITH
DEC-DG HARRIS
AND MANY OTHERS

DISK PACKS
ANY MANUFACTURER
FULL DEPOT REPAIRS

DIGITAL DATA SYSTEMS
1551 N.W. 85 Ave., Plantation, FL 33313
305-782-3290
1-800-327-8662
TELEX-232005 ATT DIG

**Deal Yourself
In On
BUY-SELL
SWAP.**

Call COMPUTERWORLD
To Place Your Ad
1-800-343-6474
In Mass. (617) 879-0700

buy sell swap

buy sell swap

buy sell swap

buy sell swap

buy sell swap



214/385-0354

BUY-SELL LEASE

- All IBM Systems
- Peripherals
- Tapes
- Disks

SERIES/1

- Systems
- Features
- Peripherals
- New systems available at substantial discounts

IBM P.C.

- Lease program for IBM personal computers

PIONEER COMPUTER MARKETING

4835 LBJ Frwy, Suite 680
Dallas, Texas 75234
214/385-0354

SYSTEMS

4341 4331
38 34
32 3

BUY • SELL • LEASE

COMPUTER
BROKERS, INC.
2978 SHELBY ST.
MEMPHIS, TENNESSEE



TOLL-FREE

800-238-6405

901-372-2622

PERIPHERALS

3203 3370
3340 3411
3350 3420



PRIME COMPUTER USERS

New 80 and 300 megabyte drives
Available for immediate delivery.
300/1440 LPM Printers
also available.
Nationwide CDC maintenance
and financing.

Call Barry Decks
Timesharing Services Inc.
(904)396-7068



Your First Choice ☒
In The Second Market

IBM PROCESSORS

- ☐ **308X** 36-60 Month Leases.
(ITC Lessor or Lessee)
- ☐ **3033** Available for
lease or sale now
- ☐ **3032** Available for
short term lease
- ☐ **3031** Available for lease or
sale now (along with A/P's)
- ☐ **4341** We're Buyers, Sellers and
Lessors of Group I's and II's
- ☐ **4331** Group II's available
for lease or sale
- ☐ **Memory/Channels** available
for 303X, 4300 and all 370's

IBM PERIPHERALS

- ☐ **3880/3830** Immediate
Availability
- ☐ **3380/3375** Immediate
Availability
- ☐ **3350/3370** Immediate
Availability
- ☐ **3803/3420** Immediate
Availability (All models)
- ☐ **3800** 30-day
3704/3705 Availability
- ☐ **3811/3211** Immediate
Availability
- ☐ **327X** We're Buyers,
Sellers and
Lessors

We Can Put It Together

Eastern Regional Headquarters

(Connecticut) 203-655-1211
New Jersey 201-568-9668
Washington, D.C. 301-441-1000
Philadelphia, PA 215-545-8035
Boston, MA 617-542-4005

Midwestern Regional Headquarters

(Chicago) 312-698-3000
Michigan 313-644-1500

Western Regional Headquarters

(San Francisco) 415-944-1111

South Central Regional Headquarters

(Dallas) 214-641-3255
Atlanta 404-256-5856
Florida 305-428-3177

Canadian Regional Headquarters

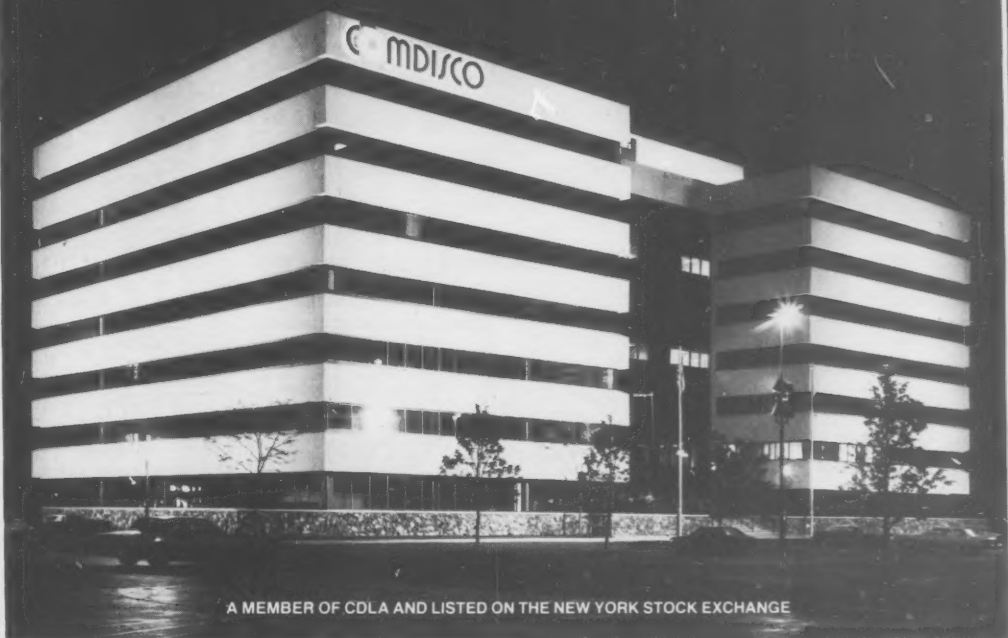
(Toronto) 416-968-7135

International Headquarters

(Chicago) 312-698-3000
Latin America 305-666-6258
Paris 01-524-5270
Switzerland 41 (21) 71 09 35
West Germany (2434) 5048

Corporate Headquarters

6400 Shafer Court 312-698-3000
Rosemont, IL 60018 TWX 910-253-1233



A MEMBER OF CDLA AND LISTED ON THE NEW YORK STOCK EXCHANGE

IBM

SERIES/1 AND PERIPHERALS			
4952	4955	4973	4966
4962	4963	4974	4978
SYSTEMS/34 ALL MODELS			
5211	3262	5251	5256
5110	5120	5114	5103
3340	3344	3410	3411
3776	3777	3741	3742

SYSTEM/32
029 129

Want to Buy
S/34 s & Series 1's
All Models



GEMINI COMPUTER CORPORATION

Gene Nichol
Headquarters
214-934-9152
14229 Preston
Dallas, TX 75234

E. R. McDonald
West Coast Office
213-704-9725
4526 Santee
Woodland Hills, CA 91364

3083-E16

4341-L11

4341-M12

3880 3830

3803

Immediate Delivery

Control Units

3274 3272

3276 3271

Immediate Delivery

3380 3375 3370

3350 3344 3340

3330 3310

Immediate Delivery

We Buy, Sell & Lease

IBM Processors and
Peripheral Equipment

Contact Bernie Gest 215-782-1040

Computer Marketing Inc.

7704 Seminole Ave., Philadelphia PA 19126

Tape Drives

3420

3410 8809

Immediate Delivery

Printers

3287 3289

3203 3211

3262 1403

Immediate Delivery

Display Stations

3278 3277

Immediate Delivery

CDLA

buy sell swap

buy sell swap

buy sell swap

buy sell swap

buy sell swap

Lease • Purchase Sell

IBM SYSTEMS & PERIPHERALS

4331 --- 4341
SYSTEM 38

612-941-0510

WINTHROP

FINANCIAL CORPORATION

computer sales & leasing division

6400 Flying Cloud Drive • Eden Prairie, Minnesota 55344 • 612/941-0510

IBM For Less.

Lease Financing

- New IBM Equipment
- Purchase/Leasebacks of Installed Systems

Equipment

- IBM 4300's
- Systems 38's
- System 34's
- Peripherals



San Antonio
512/690-9826

Please Call For A Proposal

BUY ■ SELL ■ LEASE
PURCHASE / LEASEBACK

All IBM Equipment

Call FREE 1-800-527-6438

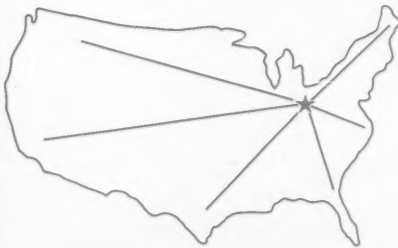
FRONTIER

COMPUTER CORPORATION

4575 S. Westmoreland • Dallas, Texas 75237
214-330-7243



CALL **SCHERERS** FIRST



YOUR CENTER FOR
DEC ACCESSORIES
& SUPPLIES

(614) 889-0810

SCHERERS

6145 SCHERERS PL.
DUBLIN, OH 43017

SCHERERS • SCHERERS • SCHERERS • SCHERERS • SCHERERS •

SCHERERS • SCHERERS • SCHERERS • SCHERERS • SCHERERS •

COMPUCOM

BUY-SELL-TRADE

RP07-AA \$26,250
RP07-BA \$28,750
RP06-AA \$13,250
RP06-BA \$15,750

COMPUCOM INC.

3404 OAKCLIFF RD., C-4 ATLANTA, GEORGIA 30340
(404) 452-1090/TWX 810-757-0202

DEC DATASTAR INC. VAX

DEC SYSTEMS

SYSTEMS

11/750, 11/44, 11/34
PERSONAL COMPUTERS

DISCS

FUJITSU, KENNEDY
W/EMULEX, DILOG

TAPES

KENNEDY, CIPHER, STORAGE
TECHNOLOGY W/EMULEX, AVIV

OPTIONS

ABLE, MICOM, RACAL-VADIC

COMPLETE INSTALLATION • SOFTWARE SUPPORT
BUY—SELL—TRADE-IN—NEW—USED

714-859-7880

23461 RIDGE ROUTE SUITE #H, LAGUNA HILLS, CA 92653

C.D. SMITH &
ASSOCIATES, INC.
DEC computer systems & components
12605 East Freeway, Suite 318
Houston, Texas 77015
(713) 451-3112
TELEX 76-2547

DEC

WE ARE BUYING: VAX 11/750,
11/780, H7112-A, H9602-BF,
RP06

WE ARE SELLING:

11/780-CP
MS780-DC
MS780-CC
FP780-AA
DW780-AA
H7100-A
H9602-HA
RH780-AA
MS750-CA
FP750-AA
RH750-AA

DEC 2080 SYSTEM

If you want on our Mailing List,
call Valerie (713) 451-3112.

IBM

3270

PRINTERS, TERMINALS
& CONTROLLERS

Please Call: (312) 943-3770
Forsythe/McArthur Associates
Inc.
919 North Michigan Avenue
Chicago, Illinois 60611

FOR SALE/LEASE IBM

370/168MP

8 Meg

Available Immediately

Call Mike Wojcik

Time, Inc.

(312) 329-6381

FOR SALE BY OWNER DEC PDP-11/45 SYSTEM

248KB Memory, FP11B Floating Point, RS11

Fixed Head Disk

- (2) RP03 40MB Disk Drives
- (2) TU10 9-Track 800BPI Tape Drives
- LA30 DECwriter Terminal
- Data Products 2470 1250LPM Printer
- (8) DL11 Asynchronous Interfaces

\$30,000 or Best Offer

OTHER

- Teletype Model 40 132-Col. Printer—New
- (4) Gates Cabinet & Wiring Harness, Serial-Parallel Interface for Teletype Model 40—New
- GE TermiNet 1200 Printer
- DG 4046/47 Diablo 5MB Disk System
- (2) DG 4075 Cassette I/O
- 6 Optima Cabinet

Call Rowan Carroll (312) 448-8414

RESULTS

Whether you're buying,
selling, swapping, hiring
or looking,

you get results from
Computerworld classifieds.

Maybe that's why Computerworld
gets more classified advertising
than all the other computer
publications put together!

buy sell swap

buy sell swap

buy sell swap

buy sell swap

buy sell swap

CMI**AMERICA'S LEADING
SPECIALIST SERVING
THE USED MARKET
REGIONAL MARKETING OFFICES**

Atlanta, GA (404) 256-7942
 Boston, MA (617) 367-5755
 California (408) 773-1614
 (415) 956-3183 (714) 752-8443
 Chicago (312) 693-2790
 Dallas, TX (214) 385-0806
 Houston, TX (713) 780-7459
 New Jersey (609) 645-7282
 New York City (212) 349-0718
 Tennessee (615) 449-6633
 Washington, D.C. (703) 442-4941
 Geneva, Switzerland Telex: 289950 WTCG
 Montreal, Quebec (514) 871-1121
 Paris, France Telex: 613910 CMI FR
 Toronto, Ontario (416) 673-3081
 Windsor, Ontario (519) 258-8910

CMI FINANCIAL SERVICES GROUP
 755 W. Big Beaver, Troy, Mich. 48084
 (313) 362-1000

CMI CORPORATION

755 W. Big Beaver, 19th Floor, Troy, Michigan, 48084
 TWX/TELEX: 810 232-1667 CMI CORP TRMI

(313) 362-1000

A Torchmark Company

Member CDLA

3033-U16

Fully Featured
 Available Now
 Lease or Sale

**USED
3081-D's
or K's**

For Sale or Lease

NEW 5224 PRINTERS

Greater Discounts Than IBM
 Leases Available
 5224-1 (140 LPM) \$165/mo.
 5224-2 (240 LPM) \$185/mo.
 Call For Short Term Rates
 Immediate Delivery
 Kevin Schaefer

3033-N8

Fully Featured
 Available Now
 Lease or Sale

**3081/3083
Lease Financing
Available**

For Your System or Ours
 2, 3, 4 or 5 Year Terms

**SYSTEM 34
SYSTEM 38****3033**

S to N to U
 Upgrades

**Wanted
4341-M2
Call Now**

3350 3880 3830
 3340 3370 3330
 3375 3380
Buy/Sell/Lease
 Pat Callahan
 Tim Ryan

3042

Attached Processor
 Available Now
 Short Term Lease

**Wanted
4341-L01
Call Now**

2914
 3203 3505/3525
 3800 3211/3811
 Mary Drangin
 3803/3420
 Immediate Delivery

**AMDAHL
V8 and V611**

Available for
 Sale or Lease

SYSTEM 38

Convert your IBM
 S/38 Lease to a
 CMI Leaseback
 12-24-36 Month Terms
 New/Used CPU's Avail.
 Kevin Schaefer

Communications

IBM 3705
 IBM 3704
 Kathleen Austin

ALL IBM COMPUTERS ARE CREATED EQUAL
 BUT, ALL IBM BROKERS ARE NOT!! CALL US

**INTERSTATE
COMPUTER
EXCHANGE**

EXPERTS IN
IBM
BUY • SELL • 72 HOUR UPGRADES

S/34

IMMEDIATE DELIVERY
 ALL PERIPHERALS AND FEATURES
 25% TO 35% OFF LIST

S/32 • S/38 • SERIES I • ALL IBM EQUIP.
 NEW S/23 — LARGE DISCOUNT!!

GUARANTEED !!

IBM MAINTENANCE • DELIVERY DATES

WANTED
 ALL DATA
 EQUIPMENT
 AND
 S/38's

WANTED —

- ALL S/34 CONFIGURATIONS
- ALL S/34 & S/38 PERIPHERALS
- ALL LEASED & OWNED MACHINES

BUYING OR SELLING EQUIPMENT

WE WILL LIST YOUR EQUIPMENT ON A COMPUTERIZED READOUT. IN
 MINUTES ALMOST EVERY BROKER AND DEALER IN THE COUNTRY WILL BE
 INFORMED OF YOUR PENDING SALE OR PURCHASE OF EQUIPMENT.

7578 TRADE STREET CALL PAUL CAYTON
 SAN DIEGO, CA 92121 COLLECT (619) 578-5410

HP

**1000
SERIES E, F, M**

**3000
SERIES II, III,
30, 33**

**7920
50 MB DISK DRIVE
7970E
(600 BYT DRIVE)
2631B
180 CPS PRINTER
2622A
TERMINAL
& MUCH
MORE**

**encore
(213) 393-8268**

BROOKVALE

RENT • SELL • UPGRADE • BUY

DEC

PDP 8, 11/03, 11/04, 11/23, 11/24, 11/34,
 11/44, 11/45, 11/60, 11/70, VAX/750, VAX/780

SYSTEMS • OPTIONS • SUPPLIES

11/70 512Kb MOS, LA36 (new) \$48,500
 11/23-BE 11/23 Plus, 512Kb MOS (new) \$5,995
 VAX 730 System with license (new) \$29,850
 Customized Configurations—Call With Your Request.

In Stock	Specials	In Stock
BA11-KE (new) \$2,495	MSV11-DD (new) \$295	
DD11-CK (new) \$375	RK05-FA (used) \$795	
DD11-DK (new) \$575	RK07-PA (new) \$6,450	
DMF32-AA (new) \$3,495	RM02-AA (new) \$11,450	
DD11-B (new) \$1,650	RM05-AA (new) \$24,850	
LA34-AA (new) \$975	VT100-AA (new) \$1,450	
MS750-CA (new) \$4,495	11/04-DC (new) \$2,850	

BROOKVALE ASSOCIATES

40 ORVILLE DRIVE • BOHEMIA, NEW YORK 11716

(800) 645-1167 • NEW YORK (516) 567-7777

DATA GENERAL
 New & Used Equipment

**BUY. SELL.
TRADE.**

McINTYRE'S
 Mini-Computer
 Sales Group Inc.

(313) 583-4100

TLX: 810-232-4866
 Answer Back: MCDATAGEN MAHS

32050 Edward Ave.
 Madison Heights, MI
 48071

Coastal Computer Marketing

**IBM
Equipment
BUY SELL LEASE**

Herb Levy
 Al Sheldon
 (800) 221-4069
 (213) 986-4830

**FORSYTHE
McARTHUR ASSOCIATES, INC.**

DEALER / LESSOR OF IBM
 Computers and Peripherals

FOUNDED 1971

Home Office

Chicago
 919 North Michigan Avenue
 Chicago, Illinois 60611
 312 943-3770

Branch Offices

Atlanta 404 953-0457

Dallas 214 934-0516

Milwaukee 414 786-9544

CDLA

buy	sell	swap	buy	sell	swap	buy	sell	swap	buy	sell	swap	buy	sell	swap
<div style="display: flex; justify-content: space-between;"> <div> <p>Control Data 64, 126, 240MB Removable Drives Printers & Displays</p> </div> <div> <p>SERIES I SPECIAL New or Used Immediate Delivery</p> </div> <div> <p>IBM 4955F, 3101, 4978, 4963-64MB, 4975, Features</p> </div> </div>														
<div style="display: flex; flex-wrap: wrap;"> <div style="width: 33%;"> <p>ALL UPGRADES</p> <p>TERMINALS 3277 3278 5256</p> <p>TAPE 3411 3420</p> <p>4300 New or Used</p> <p>SYSTEM 34</p> </div> <div style="width: 33%;"> <p>DISK 3340 3350 3380 3370 3375</p> <p>PRINTERS IBM - All Models DEC - Letter Quality for 5/34, 5/38 NEC - Letter Quality for 5/34, 5/38 DATA PRODUCTS - 240 CPS 10 1000 LPM for all IBM Systems</p> <p>LEASING SHORT OR LONG TERM NEW OR USED</p> <p>SYSTEM 38 New or Used</p> </div> <div style="width: 33%;"> <p>SERIES I PRINTERS FEATURES New or Used</p> <p>IBM 1 & CDC CPU's ALL MODELS</p> <p>IF IBM MAKES IT, WE CAN SAVE YOU MONEY - whether you buy, lease or rent from us. We also need to buy your owned or rental credit equipment. Call us for a quote.</p> <p>Marshall Lewis & Assoc., Inc. ML & A 1921 E. Carnegie Ave., Suite H, Santa Ana, CA 92705 (714) 641-0366</p> </div> </div>														

SYSTEMS • PERIPHERALS • PARTS

DG DEC

Phil Thomas
305-392-2006

Bryan Eustace
305-392-2005

Jennifer Eustace

305-392-2007 TELEX 568-670

BUY - SELL - TRADE - LEASE

THOMAS BUSINESS SYSTEMS, INC.

data3 computer corporation

IBM PROCESSORS/PERIPHERALS

GSD

S/34

S/38

SERIES/1

S/23

S/32

S/3

DPD

4331

4341

TAPE

DISK

PRINTERS

TUBES

- All Peripherals
- Special Features
- Upgrades
- Flexible Leases
- On-time Delivery
- Purchase/Leaseback

11000 Prairie Lakes Dr., Suite 600, Eden Prairie, MN 55344

call toll free

CDL 1-800-328-7938
or (612) 941-9495 collect

MEMBER
AMERICAN
SOCIETY OF
COMPUTER
DEALERS

WE BUY, SELL, LEASE, RENT, PURCHASE/ LEASEBACK.

LARGE INVENTORY
CPU's, CRT's, PRINTERS
SHORT OR LONG TERM LEASES
MONTHLY RENTALS

3741/3742

IBM

SYSTEMS

**34
& 38**

Call **BARRY TESSLER**
KEN WARREN

**Pearl
Computer Division**

P.O. Box 24026
4717 Centennial Blvd.
Nashville, TN 37202

Nashville:
(615) 383-8703

Houston:
(713) 675-7551

1000 MODEMS ^{PLUS} 1000 TERMINALS

DEC TERMINALS		TI PRINTERS	
LA50's	LA34's	VT100's	VT103's 810's
LA100's	LA36's	VT101's	VT131's 820's
LA120's	LA180's	VT102's	VT25's 850's

DF03-AA
\$495.00

DURING MAY & JUNE

VA212LC
\$495.00

*WHEN YOU BUY A NEW OR USED TERMINAL OR PRINTER AT

SCHERERS ^{LOW} **PRICES** ^{LOW}

you can then buy a Brand New 300/1200 Baud Bell Compatible 103/212A

Originate—Auto Answer Modem for

\$495.00
each

YOU DECIDE

Which Terminal & Which Modem

DEC DF03-AA — *\$495.00

OR

VADIC 212 LC — *\$495.00

SCHERERS

6145 Scherers Place
Dublin, OH 43017
(614) 889-0810

SPECIALISTS IN:
DEC EQUIPMENT
TI PRINTERS

SCHERERS* SCHERERS

SYSTEM/32 ^{WANTED!} SYSTEM/34

If you have a System/32 or System/34 to sell, we would like to buy it. We are dealing on behalf of already committed buyers and can afford to pay top dollar for your computer.

CONTACT

Mr. Walt Evans
Interstate Medical
Billing
7578 Trade Street
San Diego, CA 92121

Call Toll-Free
800-582-6474

FOR SALE TATE RAISED FLOORING

1700 Square Feet
In Excellent Condition
Call **Bob Hauenstein**
(215) 768-4123

IBM BUY SELL OR LEASE

IBM CRT's, Printers, Controllers
IBM 4331 & 4341 Processors
IBM 3350, 3570, & 3575 Disks
IBM 3411/10 & 3420 Tape Drives

WANTED

3890-B4 & B5 Document Processor
3211/3811 Printer System
3800-1 Printing Subsystems
3200-5 Printers

IBM 3276-2 & 3287-2
REFURBISHED/IBM MAINTENANCE
OCM, INC.
6604 W. 93rd St., Ste. A
Overland Park, KS 66212
(913) 381-2406

SELLING?

Sell your product or service in Computerworld classifieds. Join the thousands of advertisers who use our classifieds because they get results. You can find buyers for discs and DEC's, terminals and timesharing, software and System 370's. More than half a million active computer people read Computerworld each week, and you can reach them efficiently in Computerworld classifieds. To place your ad, or to get a rate card with complete details on Computerworld Classifieds, call or write:

Classified Advertising

Computerworld

P.O. Box 880

Framingham, MA 01701

1-800-343-6474

617-879-0700

buy sell swap

buy sell swap

buy sell swap

buy sell swap

buy sell swap

* * * * DEC * * * *

BUY—SELL—LEASE—TRADE—CONSIGN

— SYSTEMS —

11/44, Dual RM02, TS11, DZ11E
 11/34A, Dual RL01, LA36, RSX11M
 11/60, Dual RK06, FP11EA, DZ11
 11/23, Dual RL01, RX02, DLV11J
 11/780, RM05, RP07, TEU77, VMS
 11/34A, Dual RK06, TJU16, RSX11M
 11/70, Dual RM03, TWE16, LA120 50 HZ

— CPU'S — DISK-TAPE-MEMORY —

Call for Quotation

— OPTIONS —

FP11 (All Types), FP750, FP780
 DMC (All Types), DMR11-AC, KMC11B
 DT03, PCL11-A, DH11, DZ11
 PC11, DJ11, DQ11, DV11BC
 DUP11, DR11, KK11, RH11, LP05
 TM03, KW11P, KW11W, KG11
 RH780, MM11YP
 TMB11, DA11BD

SPARE FOR ANY DEC UNIT
 CALL FOR QUOTE

NATIONAL COMPUTER

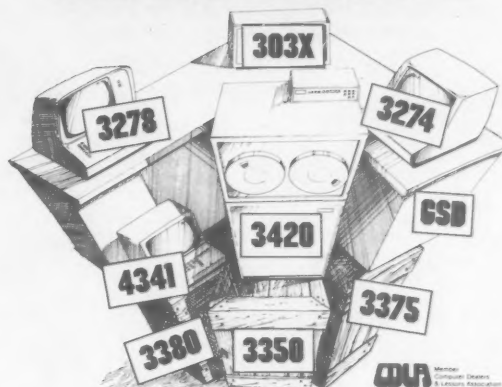
EXCHANGE

800-854-7224

6980 Aragon Circle, Suite 5 • Buena Park, CA 90620

(In Calif.) 714-522-1870

TWX: 910-596-1499

THE HARDWAREHOUSE IS
HARD TO BEAT FOR PRICE
AND AVAILABILITY.

Call Us Collect

UNITED STATES

Boston: Eastern Regional Headquarters (617) 272-9110
 Washington, D.C. (703) 525-5233
 New York (212) 832-2622
 Philadelphia (215) 293-0546

Austin: Southern Regional Headquarters

(512) 451-0121
 Atlanta (404) 768-6535
 Dallas (214) 233-1818
 Houston (713) 629-4440

Chicago: Central Regional Headquarters

(312) 789-9100
 Pittsburgh (412) 922-8920
 Detroit (313) 995-8717

San Francisco:**Western Regional Headquarters**

(415) 283-8980
 Los Angeles (213) 670-7994
 Denver (303) 534-7436
 San Diego (714) 231-2361
 Seattle (206) 447-1682
 Phoenix (602) 248-5978
 Portland (503) 228-7033
 Salt Lake City (801) 298-4281

CANADA: Toronto

(416) 366-1513
 Montreal (514) 281-1925

BROKER/DEALER SALES AND LEASING

Phoenix: (602) 248-6848

CPU's, Memory Dave Keane
 Peripherals Sandy Mitchell
 Communications & Terminals Tim Stone
 CSD George Beck
 Leveraged Leasing Phil Iversen or Wayne U. Smith
 Broker/Dealer Dave Revere



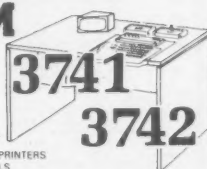
GREYHOUND COMPUTER CORPORATION

Greyhound Tower Phoenix, Arizona 85077, 800-528-6113

Buy - Sell - Lease

S/32
S/34
S/38

IBM

CPU'S CRT'S PRINTERS
ALL MODELSPURCHASE LEASEBACK
SHORT & LONG TERM LEASES

Computer Marketing

of America, Inc.

P.O. Box 90907

422 Acklen Park Drive

Nashville, Tennessee 37209

Call: Dick Geyer

1-800-251-2670

In Tennessee: 615-297-7516

DATA GENERAL

We Buy, Sell And Service

New And Surplus Systems and Peripherals

Call Or Write

Hanson Data Systems

(outside Mass. toll free)

(within Mass.)

1-800-225-9216

(617) 481-3901

P. O. Box 27, Southboro, MA 01772

WANT TO BUY

IBM-3274s, 3276s,
3277s, 3278s, 3287s

Purchase/Leaseback Inquiries Invited!

Call 214/258-0541



METROPLEX COMPUTER COMPANY, INC.

320 Decker Drive • Suite 180 • Irving, TX 75062

TWX 910-860-9285



System

38/36
34

• Significant Savings • Trade-In Allowance • Guaranteed full IBM Support • You pay only after installation and IBM accepts the equipment under maintenance • Fortune 500 references

Can you believe lease terms better than IBM?

• New Tax Lease
 • Purchase/Lease Back
 • Check IBM's New Plan A & B... then call Datacomp

The Datacomp
 Leasing & Service
 Group

Toll free 1-800-393-3289
 New Jersey 801/467-8686
 Chicago 312/446-4300

The Market Leader in current used IBM

BUY • SELL • LEASE

SERIES 1

S/34 • S/38

S/23 • 5110 • 4300

All IBM and peripherals

XERXES

COMPUTER SALES

1614 Harmon Place, Suite 210 • Minneapolis, MN 55403

800-328-3884 / 612-339-3042

buy sell swap

buy sell swap

buy sell swap

buy sell swap

buy sell swap

DEC equipment at the lowest prices n-a-t-i-o-n-w-i-d-e!

Call toll free **800-328-7000**

In Minnesota (612) 894-4020 • Telex 291084

MIDWEST SYSTEMS, INC.
12117 Riverwood Drive, Burnsville, Minnesota 55337

IBM
Model 3101-22
\$1,195
Limited Quantity
New Displays
In Original Cartons

ML & A Call Jerry or Alan
Marshall Lewis & Assoc.
(714) 641-0366

3705

Buy, Sell, Lease

Call Bob Irish

(612) 884-3366

Centron-DPL Company

OLA

BIDS & PROPOSALS

BUY SELL LEASE

NEW IBM CPU's & PERIPHERALS AT DISCOUNTED PRICES FULL IBM WARRANTY

34's, 38's, 5251, 5291, 5224, 5225, 5226, 3262

DATA MAN

3520 Overlook Circle, Knoxville, TN 37919
615-588-1863

NEW USED

UNBEATABLE PRICES

T.I. Specialists*

ADDS



DEC

DIABLO

HAZELTINE

QUME

TELEVIDEO

TEXAS INSTRUMENTS

TO 50% DISCOUNT

THE COMPUTER BANK

315 Rte. 110, Hunt, Sta., New York 11746

(516) 549-5500

* Printers, Systems, Terminals, VDT's

For sale by The University of Alabama, various computer equipment as listed below. This equipment can be inspected by contacting Dr. Robert Sweeney, Director, School of Accountancy, 328 Bldg. Hall, University, Alabama 35486, (205-345-5131).

Sperry Univac V77-800 Computer System

Item #	Quantity	Type/Feature Number	Description
1	1	F3078-03	Configured 77-814 CPU Cache
			CPU Data Loop
			CPU Control
			MAP - T&C
			Clock Board
			Power Fail Board
			Operator's Console
			Chassis w/ten Tray
2	1	F3029-00	8 "U" Connector Plane
3	2	F3030-02	4 "U" Connector Plane
4	2	F3030-01	System Power Supply
5	1	F3035-03	16KB Memory
6	1	F3054-01	I/O Expansion Chassis
7	1	F3029-02	8 "S" I/O Slots Connector Plane
8	1	F3030-04	16 "S" I/O Slots Connector Plane
9	1	F3030-06	I/O Expander
10	1	F3036-01	PM
11	2	F3024-01	75" Cabinet
12	1	T2834/T2835	System Power Supply
13	1	F3035-03	WCS (1 card)
14	1	0870-35	Mag Tape Drive, 800/1600 BPI, 75 IPS 120 VAC, 60
15	1	0789-06	Printer, Line, 600LPM, 115VAC, 60HZ
16	1	2825-00	Disc Drive, 40 MBYTE, pack-oriented
17	1	2825-06	Disc Slave, 115VAC, 60HZ
18	2	2834-00	Equipment Cabinet, 115VAC, 60HZ
19	1	2834-01	Expansion Cabinet, 115VAC, 60HZ
20	3	F1223-01	Disc Pack
21	3	F3001-02	LAD, Direct Connect, Current Loop I/F
22	3	F3024-01	Priority Interrupt Module
23	1	F3025-03	Data Save Option for F3035-03
24	1	F3035-03	System Power Supply, Expansion
25	1	F3036-01	I/O Parity Line Expander
26	1	F3057-00	Writable Control Store 2048 Words
27	1	F3062-00	Controller, Mag Tape (0870-35)
28	1	F3067-00	Controller Set, 77-400/800

CONDITIONS OF SALE

1. Sealed bids will be opened at 2:00 p.m., June 28, 1983 in Room 355 Rose Administration Building, University, Alabama 35486.
2. The University of Alabama reserves the right to accept or reject any or all bids. The University of Alabama will be the sole judge in the bid evaluation and award.
3. All equipment is to be sold as is in its present location. The successful bidder will be responsible for removing the equipment from its present location.
4. Quote prices for all items listed. The University of Alabama will consider partial bids for each item listed. If quoting partial bid, identify the items you are bidding by item number.
5. All items have been covered under Univac maintenance agreements since installation.
6. Award will be made to the successful bidder within five (5) working days after bid opening. The successful bidder will then have a minimum of ten (10) days thereafter to remove all of the specified bid items.
7. Mark outside of envelope "Sealed Bid for Computer Equipment for Sale due 2:00 p.m., Tuesday, June 28, 1983."
8. Return sealed bid to: The University of Alabama, Purchasing Department, P. O. Box 6149, University, Alabama 35486 on or before 2:00 p.m., Tuesday, June 28, 1983.

WANTED FOR JULY

4341-M2 3375-A1 3375-B1

BUY/SELL/LEASE

3350 3370 3375 3880 3420
System 34 And Peripherals
System 38 And Peripherals



Leasing Dynamics, Inc.
1717 East Ninth Street
Cleveland, OH 44114

(216) 687-0100
Susan Hoell

→ NCR USERS

Are You Thinking
of Trading Up ↑ ?
or Down ↓ ?

Call Us for a Quote



SMITH ANDERSON CORP.
619-340-6888

Authorized **NCR** Systems
Distributor - Nationwide
(New or Used Systems)

71-856 Highway 111
Rancho Mirage, Calif. 92270



IBM
34/36/38

Purchase Or Purchase/Leaseback

S/34 Interim to S/36 or S/38
Short Or Long Term

Lease 34/36/38 - Our Delivery Position Or Yours

Purchase Discount On New S/38.
Full IBM Support Guaranteed.

CALL COLLECT! (817) 268-0023

3101.22

Up to 35% off IBM List
Some New Immediately
Available in Quantities
2095 & 2096
attachments



**PIONEER COMPUTER
MARKETING**
4835 LBJ Frwy., Suite 680
Dallas, Texas 75234
214/385-0354

AUCTIONS

PUBLIC AUCTION

June 9, 1983, 10:00 A.M., located at 3100 North Amout, Metairie, LA. We will sell (2) complete computer systems, 1 Data 4, Model #1308, 64K, 2.2 megabytes, with printer 150 lpm, 2 CRT's and all accessories including \$35,000 worth of software styled for the complete accounting ledger, inventory, etc. 1 complete CADO System, Model #2301 20-4, 3 drives K memory with 7 megabytes, 2 CRT's Model B, General Electric lineprinter with software containing accounting ledger, inventory, etc. TERMS: Cash, certified funds, check with bank letter of credit. Sold as is where it is.

Sencore Auction Services
8220 Old Gentilly Road
New Orleans, LA 70126
(504) 241-9395

Computerworld

CLASSIFIEDS:

Our business is to help you improve your- via programmers, analysts, engineers, terminals, printers, software packages, computer time, computer services, office space, advertising for seminars & conferences, business opportunities, etc. ...AND ...

...exposure to an audience of over half a million readers nationwide...
...every week.

SYSTEMS/BUY SELL/PERIPHERALS

WANG

Data & Word Processing
2200 Series, VS, WP, OIS
CPU's, CRT's, disk/tape drives,
printers, MEMORY UPGRADES.

Magnetic Media

Disk packs, diskettes, tapes,
rbns, print wheels, stk. forms.

ERST

INTERNATIONAL CORPORATION
225 Lafayette Street, New York,
New York 10012

CALL
1-800-FOR-ERST
IN NEW YORK
212-431-1100

**FOR SALE
VAX 11/730**

\$35,000

Contact Ray Gillespie
(800) 354-9206
(In KY) (606) 278-0411

The Bulletin Board

Buy • Sell • Lease Buy • Sell • Lease Buy • Sell • Lease Buy • Sell • Lease

DISK DRIVES AND PACKS

CDC DISK SPECIALS

9766 300MB New \$10,950
9766 300MB Demo 9,500
9775 675MB Fmd 15,900
9782 80MB Used 3,700
9782 50-60Hz Kits 295
All Models in Stock • Buy and Sell
All Warranted • Subject to Prior Sale
SYNTEL CORP. (919) 781-3021

FIJITSU EAGLES

474 MB \$10,500
160 MB 6,900
Also Full Line of
SI Controllers;
STC TRI Density For DEC VAX
SYNTEL CORP. (919) 781-3021

SPERRY UNIVAC

NEW UNIVAC 1100/61 C2
Available Immediately, ITC Available,
Maintenance Guaranteed, Very Large
Discount - Configuration Includes: 3
(3) MB Processor, 2,000 MB Disk (2 x
(1) 6,250 Tape Drives (U-36), 1200
LPM Printer, 750 LPM Printer, GCS, 7
Ports and Modems.
Direct From Owner
(612) 451-4361 or (612) 451-5275

V-77 800 SYSTEM
(2) 256K CPU w/2 Pages WCS
(2) 843/20 200 MB Disk Drives
(4) 10 MB Disk Drives
(2) 800 tpi Tape Drives
(2) 800/1800 tpi Tape Drives
(1) 300 LPM Printer
(1) 800 LPM Printer
THE EXCHANGE (206) 644-7006
Ask for TOM BASS

Sell Your Product
in the
BULLETIN BOARD

WANG

Available Immediately
WANG
Model 2265V-1
75MB Disk Drive & 2 CDC
877 Packs. 1 year old. \$9995
cash.
(301) 459-3700, Mr. Krear

WANTED

Used, Excess
WANG Parts, Equip't.
OIS - VS - WP - 2200

FOR SALE

2256-C Brand New! \$4,200
2260/6580 Equiv "Pins" \$7,800
2265V-1 Equiv (Pre-owned) \$4,800
2265V-2 Equiv (Brand New) \$12,900
(617) 372-8536
CFR Associates, Inc.
18 Granite Street
Haverhill, MA 01830

SYSTEMS BUY/SELL PERIPHERALS
DATA & WORD PROCESSING
CPU's, CRT's, Disk & Tape
Drives, Printers, Memory Up-
grades, Disk packs
(212) 431-1100
ERST INTERNATIONAL

For Sale

WANG WPS-30

Refurbished
Word Processing System
Incl: CPU, 10 Meg Disk, Wk. Sta.
& Daisy Ptz. \$8,900
617-372-8536
Mr. Dwight Krantz

WANG

Pssst...

WANG USERS.....
HAVE YOU HEARD ABOUT THE
GROUP OF FORMER WANG EM-
PLOYEES IN ATLANTA WHO BUY &
SELL USED WANG EQUIPMENT AND
PLUG COMPATIBLES?
L.C.A.
(404) 853-8288

VS SOFTWARE

FREE
SOFTWARE OFFER +
ANTI-GLARE FILTER
Send for VS Product Brochure:
Microcomputer Interactive Systems
9550 Firestone Blvd.
Downey, CA 90241
24-Hr. Number (213) 862-1805

BUY AND SELL WORLDWIDE

• Computers • Word Processors
• Peripherals • Upgrade
• Compatibles
Norcomex, Ltd.
7501 Keele St. - Ste. 400
Concord, Ontario, Canada L4K1Y2
(416) 738-0803
TELEX: 08-686766
Attention: Norcomex

MISC.

BUY AND SELL NEW • USED • SURPLUS

Data General CRT Terminals
Pentronix CRT Terminals
Data Products CDC Disk
TI Terminal Hewlett Packard
Diablo Wangco
STC Tri Density For DEC VAX
SYNTEL CORP. (919) 781-3021

DATAPOINT

Buy • Sell • Trade

American Computer Exchange
(216) 247-2100

Buy • Sell • Lease

DATAPOINT

Cougar Computer Corp.

Suite 219

26250 Euclid Office Plaza

Euclid, OH 44132

(216) 261-3500

FOR SALE

Northern Telecom
Keybatch 77

Key to disk data entry system
64K Memory/Communications
(704) 374-1615

Find a
computer
in
Cleveland,

or a
disk drive
in Detroit.

Right
here in

Computer-
world's

Classifieds

HONEYWELL

LEVEL 6 & DPS 6 EQUIPMENT

NEW & REFURBISHED
Systems • Peripherals • Memory
CRT's • Applications Software
SUBSTANTIAL DISCOUNTS!!
Boudreux Computer Services Ltd.
100 Bearfoot Rd.
Northboro, MA 01532
(617) 393-6839
TWX 710-347-7574

MODEMS

MICOM

MULTIPLEXER MODEM

Model 8000.4 Channel
2400 Baud, Asynchronous
Background Printer Option
Retransmits on Error
Used 1 yr.
(904) 737-0984

The Bulletin Board
makes selling
your
equipment easy!

DEC

DEC SPECIALS

(1) 11/70 w/1/2MB MOS,
Dual H960 Cab
• RK07 Unused, Call
• RM03 Unused, Call
• TGL77-AB, Call
• DM811-AD, Call
• BA11-KE New, Call
SEVCO INC. (617) 435-0938

Call For Your DEC Needs

861-D \$750 BA11-KE \$1,650
D011-CF \$100 DL11-W \$425
DZ11-A \$2,195 H754 \$295
RH780 \$5,995 RKV1 \$595
RPO8-BA165,500 TUGS-KE \$3,995

Pacific Computer Sales, Inc.

(408) POP-1170

Telex 172337

USED DISK PACKS

Guaranteed

RL02, RL01, RK06

Unused LP25 Printer

ESS (701) 237-0689

BUY • SELL • TRADE

11X44-CA525000 LP11-VA \$2950
CR11 \$1295 MS11-MB \$1375
DMC11-AL \$1195 PC11 \$1295
DMC11-MD \$1095 RH11-AB \$2995
FP11-C \$2995 RK07-DC 3 185
H7100-AA \$2995 RM80-C \$1495
NEW YORK COMPUTER EXCHANGE
(516) 752-8868 (800) 645-9109

FOR SALE: DISK PACKS

BRAEGER PERIPHERALS
• DSC302-6 (Century T-302RM)
disk drive w/Emulex SC70/B2
cntrlr. (4) disk packs.
• (2) Disk packs for RPO8 disk
drive.

Call Keith Carlson

616-361-4194

DEC NEW & USED

BUY — SELL — EXCHANGE

Systems • Processors • Memory
Options • Peripherals • Modules
LAKWOOD COMPUTER CORP.
3268-B Keller St., Santa Clara, CA 95050
(408) 266-2545

DEC SYSTEMS

11/03 systems w/RL01 disk, LA180
printer, 64KB memory, RT-11
license \$4,500
Complete packaged 11/23 systems
with dual RL02 \$12,500
LA180 ptnr. w/interface & cntrlr. \$500
Other Configurations CALL
E.E.C. Systems Inc.
(617) 443-5106

DEC

DEC PDP 11/34A
256KB, RK01, FP11A, LA180, 1811,
VT100AVD, 2-DZ11's
CDC 8766 300MB Disk, Partec
800/1600 BPI Tape, 3-Disk Packs, 10-
2400 Tapes.
Certified for Maintenance
\$40,000
Call Roger L. Cordes, Jr.
William C. Daniel & Assoc.
(819) 487-9758

DEC Equipment

New And Used

PDP 8's & PDP 11's

Repair parts, small options
and industrial controllers.
This months special RPO8-JAA, \$600
Paul D. Anderson & Assoc. Inc.
(217) 586-5047 Ask for Kent

FOR SALE

(2) RM-03 AA Disk Drives

Always Under

DEC Maintenance.

At Current ECO Levels

Available In 60 Days

Contact Tom Walsh at

617-532-2000 X341

VAX RESOURCE ACCOUNTING

AND CHARGEBACK SYSTEM

Easy to use/Ext. help/Menu driven

Mgmt reporting/Disk accounting

Royalty accounting (3rd party)

Project Accounting/Multiple discounting

Variable sales/Prime/Non-Prime time

\$1200.00 U.S.

Virtual Computing #180,825-11 Ave. SW.

Calgary, Alta., Canada T2B0C9, (403) 266-7448

PRINTERS

DATA GENERAL

ECLIPSE C/150 No Memory \$9500.00
ECLIPSE 256K Memory 3200.00
6026 Mag Tape sub sys 10300.00
6080 Sub Sys 13500.00
6020 Sub Sys 5000.00
7700-1 Mac Pnt New 2020.00
ECONOMICAL DATA SYSTEMS
804-493-0682

Computerworld's

Classified

open new doors

to selling

your equipment.

IBM

S/38

For Sale or Lease

\$/34 Avail.

w/Upgrades

Vargo Companies

313-254-2850

FOR SALE

5285

COS

w/1150, 2500, 3505,

3701, 4601, 5801

Call Ron Gibb

914-238-9631

WANTED

4331

K2 or L2

Call Bill Hegan

Computer Merchants, Inc.

914-238-9631

WANTED FOR JULY

4341-M2 3375-A 13375-B1

Leasing Dynamics, Inc.

1717 East Ninth Street

Cleveland, OH 44114

Call Susan Hoell

(216) 687-0100

IBM

Buy • Sell • Lease

IBM

Cougar Computer Corp.

Suite 219

26250 Euclid Office Plaza

Euclid, OH 44132

(216) 261-3500

For Sale or Lease

Qty 3278-2

4621 • 4622 • 4627 • 8K0731

As low as \$37/month

3274-A31/C31

Call SYSCOMP Collect

(813) 799-4310 (612) 292-9922

BUY-SELL-LEASE

CRT's & Printers

5291's, 5224's, 5225's

Available immediately with complete

IBM systems. Call regarding our flexi-

ble lease program.

CENES CAPITAL CORP.

(212) 279-4467

(713) 827-7724

FOR SALE OR LEASE

SYS/34-F37

256K-Mem. 256M-Disk

\$47,000

Syscomp (813) 799-4310

THE CATHOLIC DIOCESE

OF JACKSON, MISSISSIPPI

Would like to acquire an IBM Sys-

tem 34 with the following configura-

tion:

64K Memory - 128M Disk

3262 Printer

1 to 4 5251 Terminals

And Communications

We would like to make contact

with anyone who would like to

consider the above for a charita-

ble donation in part or in full.

Call or write Dick Biscoe

Catholic Diocese of Jackson, MS

P.O. Box 2248

Jackson, MS 39205

(601) 969-1880

168-U34

Same Speed

3033-S

Asking \$15K

Robert Alain

(514) 282-0666

PRINT

TRAINS

IBM 1416 & 3216

Bought - Sold - Lease

Repaired - Reconditioned

COMPU-ACT COMPANY, INC.

(813) 863-2461

ATTENTION

SYSTEM/34 USERS

Send for a sample issue of TIPS AND

TECHNOLOGIES, the journal of pro-

gramming and operations for the IBM

SYSTEM/34.

Bette Publishing, Inc.

1814 Capital Towers Bldg.

Jackson, MS 39201

601-354-9882

FOR SALE OR LEASE

4331-J1

1 Megabyte

1421 Block Mux

1901 Control Store Exp

2001 Display/Printer Exp

3201 DASD Adapter

3401 Diskette Drive

4910 8809 Tape Adapter

5248 Byte Mux

5531 Power Interface

5532 Power Interface Addl

K2 or L2

1601 Comm Adapter

3701 EIA Interface

4695 Line Base-Clocked Modem

The Bulletin Board

Buy • Sell • Lease

Buy • Sell • Lease

Buy • Sell • Lease

Buy • Sell • Lease

HEWLETT PACKARD

HP 3000
FOR PURCHASE SALE OR LEASE
• Series 40 & 44
• Disk Drives
• Tape Drives
• Printers
• Terminals
Call Bruce or Jean For Details
BVF Inc.
(301) 948-2684

**1 Each Rent or Sale
MAKE OFFER**
HP 85 with Software
HP 86 with Software
HP 87 with Winchester Disk
Jim Langston
213-559-3822
800-421-4805

**AIRBORNE
DATA SYSTEMS**
WE BUY AND SELL

HEWLETT PACKARD

1000 • 2000 • 3000 •
9800 SERIES
Systems • Peripherals
PO Box 3784
Sonoma, CA 95370
(209) 533-2400
FAX R188888

HEWLETT PACKARD

HP 3000
BUY & SELL
Complete Systems
Memory • Terminals
Disk Drives • Tape Drives
Miscellaneous Parts
ConAm Corporation
(Formerly Finley & Associates)
(800) 943-4854
(213) 458-2843

Buy-Sell-Lease
HP3000 3X, III, 4X
and related peripherals
Call Carol
CSU INDUSTRIES, Inc.
516-239-4310

FOR SALE
2640B \$1395
2647A \$4200
2648A \$3900
7970C, HPB \$7900
2608A, HPB \$7250
• OTHER EQUIPMENT AVAILABLE •
BUY & SELL
WESTERN DATA SALES, INC.
(213) 543-5282

HP 3000
BUY & SELL
Complete Systems, Memory,
Terminals, Disk Drives, Tape Drives,
Miscellaneous Parts.
Charles Finley
ConAm Corporation
(213) 458-2843
(Formerly Finley & Associates)

HEWLETT PACKARD

6 Months Old
HP 3000 40SX
1 MB, 16 Ports
1-7912, 1-7933, 1-7970, 4-2622A
1-2621B, 1-Datapoints B1000
1-Printtronix P300
\$143,000 or Assume Lease
Call Bill
(509) 456-8180

Call
1-800-343-6474
to place your ad

DATA GENERAL

DG 6026 S/S NEW \$11,499
1144-B NEW (2-Bay) \$1,199
DG 73MB S/S NEW \$13,000
DG MCA #4208 w/cable \$950
Nova 4C RTC 64K \$1,500
6021 New \$5,500
LP2 printer 6067 \$1,450
6070 S/S, AO From \$3,500
CALL FOR UNLISTED EQUIPMENT
SYSGEN DATA LTD. (516) 496-7777

DATA GENERAL

8678-R S/140 S12K/FIS \$17,500
8611-KB S/130 Eclipse 128KB \$5400
8448 C/300 Eclipse 192KB \$3600
6051 192MB Disk Subsystem \$16,500
6060 96MB Disk Subsystem \$14,500
S393-K NOVA 4X 128KB \$4500
S390-H NOVA 4C 64KB RTC \$1700
8703 512KB MV/6000 MOS \$2900
Emulog-200 CRT New Disc. Price
6106 0200 CRT New \$1465
Data Investors (301) 636-7801

NPA SYSTEMS INC.
BUY, SELL, LEASE
\$2 mill. of DG equipment in stock
Service available in New York
Call for Price Catalogue
(516) 467-2500

WE SELL, BUY, TRADE
D.G. Computers
Call the office nearest you for free
brochure or quote
International Computer
Remarketing, Inc.
TEXAS (214) 780-1600
ILLINOIS (217) 351-7882
CALIFORNIA (408) 554-8717

BUY - SELL - TRADE
New and Used D.G.
CPU'S, PERIPHERALS, DISKS
MEMORY
Datatrend Inc.
(617) 233-9318 (800) 343-3616

DATA GENERAL

Complete
DG System for Sale
CS/80 Mod. C5
256KB Memory
(2) 190MB Disk Drives w/Disk Packs
(9) Terminals
(1) 800/1600BPI Tape Drive
(1) 120CPS Printer
Like New
Call Steve Engom (301) 321-8444

**Your ad can be
seen here
for just \$115.**

BURROUGHS

B900
For Sale or
Take Over Lease
Used only 3 months
Call for details
(408) 727-2811

BURROUGHS

BUY SELL LEASE
All Systems & Peripherals
AVAILABLE
• B1855 Sys • B1955 Sys
• B900s • B900s
(Configured To Your Specs.)
SPECIAL: B1966 MEMORY
• SRI Terminals
• TDS30s, MT963s, MT965s
• 200 & 207 Style Disk Drives
• Various Tape Sub-systems
• Memory Upgrades
• Printers 9246 & 9249 Styles
Guaranteed Burroughs Maint.
Depot Maintenance Available
COMPUTER PROVISIONS
(218) 292-3774
(Member IBMA)

QANTEL

FOR SALE
Qantel 960,
64K, Disk Drive,
CRT Controller
Qantel 1400 Processor,
128K
1-800-528-4404

THE BULLETIN BOARD

A Low-Cost Way to Sell Hardware and Software
in Computerworld.

What is The Bulletin Board?

It's a classified section in Computerworld designed especially for the selling and buying of individual pieces of hardware in a convenient, low-cost format. It is especially suited to companies that have a piece of used equipment they want to sell. For one low price, you can inform more than half a million Computerworld readers around the country of your equipment's availability.

How Does The Bulletin Board Work?

Bulletin Board ads come in standard units (one column wide by one inch deep) and standard typefaces. (Units may be combined to produce deeper ads, but one column is the maximum width and no units of less than one inch are available.) Ads are arranged under headings (such as "IBM", "DEC" or "Printers"). The headline of the ad is set in larger, bold type, and should contain the standard equipment identification. The body copy should describe the equipment very briefly and give the person to contact. This is all the information an interested buyer needs to follow up. No ad should have more than one piece of equipment or software.

The price for each standard unit is only \$115.00 (One unit minimum and no fractional units available.) Anyone can place an ad, but no agency commissions are paid, no quantity discounts allowed, and no credit toward rate is given for contract advertisers who advertise in other sections of Computerworld. It's a simple and effective system for buying and selling hardware and software.

How to Place an Ad in the Bulletin Board.

Ads are accepted in the mail, by phone or by telecopier. Ads can be accepted until the Monday before issue (7 days in advance of issue date). You should write out your ad before submitting it. (The standard size will hold approximately 25 words of copy.)

Once you've written your ad, send it in with the coupon below or call one of our ad-takers. (If your company has never advertised with us before we request a check with your order.)

Remember that all ads are standard. No special typefaces, no borders and no logos are allowed. Ads are set on a six-column page in our classified section under the heading "The Bulletin Board." We assume no liability for errors beyond the price of the ad in the case of material errors.

ORDER FORM COMPUTERWORLD BULLETIN BOARD

Issue Date: Ads can be accepted up until the Monday preceding the issue desired. Computerworld comes out every Monday.

Classifications: Most ads will be classified according to the brand of equipment that is being bought or sold. These classifications are: Altos, Burroughs, Control Data, Data General, Digital/DEC, Hewlett Packard, Honeywell, IBM, NCR, Salvage, Sperry Univac, Teletype, Terminals, TI, Wang, Miscellaneous.

Copy: Copy for your ad must be clearly typewritten and may be sent in via the mail or by telecopier (telecopier extensions are 410 and 451). Ads may be given over the phone to our team of ad takers. The standard size is 1 column by 1 inch deep. These units may be combined to form larger sized ads. Describe the equipment very briefly, give the price and the name of the person to contact. All ads will be set up using a standard format. No borders or logos are allowed.

Cost: The price for each standard unit is \$115.00 (One unit minimum and no fractional units allowed). There are no agency commissions and no quantity discounts.

Billing: Once you've written your ad, send (or call) it in with your name and address for billing purposes and we'll run it. (If your company has never advertised with us before, we request a check with your order.)

Issue Date(s): _____

Signature: _____

Name: _____

Company: _____

Title: _____

Address: _____

Telephone: _____

Send this form to:
COMPUTERWORLD BULLETIN BOARD
375 Cochituate Road, Box 880
Framingham, MA 01701

(800) 343-6474

(617) 879-0700

SOFTWARE FOR SALE

VAX PDP-11 Application Software

- General Ledger
- Accounts Receivable
- Accounts Payable
- Payroll
- Job Cost
- Order Entry
- Inventory
- Fixed Assets
- Client Writeup
- Automatic Restart
- Tailorable
- Multifuser
- Multitasked ISAM
- RMS Files
- Support Hotline
- Security System
- User-defined Forms
- Fully Documented

• Phone Demonstrations
• \$1,000 to \$3,500/module



Compu-Share
3824-50th Street
Lubbock, Texas 79413
(806) 792-3785

Now available on TYMNET

IBM 3270 for Apple II

• Biscuit communications, multi-point and dial up • Save screen data in DOS 3.3 text files • Circuit board and software, \$350.

Ergonomic Software

P.O. Box K, New York, NY 10028
212 427 2373

VM UTILITIES

Password Change Control System:

- Multiple System Capability
- Supports VM, TSO, CICS, and GUARDIAN

Minedak Administration:

- Link Analysis
- Extant Analysis (supports shared DASD)
- Password Control
- File Scan

W. A. Humphries
Proprietary Software
POB 1083, Cathedral Station
New York, NY 10025
(212) 678-0057

**SELL
YOUR
SOFTWARE
IN THE
CLASSIFIED
PAGES OF
COMPUTERWORLD**

Call
800-343-6474
(or 617-879-0700)
for more
information

An outstanding electronic spreadsheet is now available for the

IBM SERIES/1

With Calc/1, you can generate reports, create forecasts and budgets, and access your EDX data files. No computer experience necessary.

H & A Computer Systems
30 Hotaling Place #204
San Francisco, CA 94111
(415) 434-3517

SERIES/1 SPECIALISTS

IBM SYSTEM/38 BUILDING BLOCK SOFTWARE SYSTEM

RMS/38 offers full range of integrated applications for distribution, manufacturing and financial users. On-line systems using data base management. Menu driven. User friendly. RPG III code. Documentation and support. Ready to go. Ready to grow.

Call: (312) 932-2200



professional
computer
resources

2021 Midwest Road, Oak Brook, IL 60521

APPLICATION SOFTWARE CUSTOM WRITTEN AT PACKAGE PRICES

FOR DEC10 AND DEC20
USING COBOL AND 1022

ALSO

DEC10 TO DEC20 CONVERSIONS
VAX & PDP11 IN COBOL AND BASIC

SOFTWARE ENHANCEMENTS

(603) 689-5755
400 AMHERST STREET
NASHUA, NH 03063
TELEX 953027

DIAL-A-DEMO

SEE OUR WIDELY USED DBMS
KEY/500
AND RELATED ACCOUNTING PACKAGES

- Order Processing
- Accounts Receivable For DEC
- Inventory Accounting RSTS/E
- Accounts Payable And The IBM
- General Ledger CS9000
- Payroll



314 962-0362 • 800-325-9494

SOLID SAUER SOFTWARE

STEADILY UPGRADED SINCE 1974

MCBA SOFTWARE

IBM VM/CMS BURROUGHS

- General Ledger
- Accounts Receivable
- Accounts Payable

Online/User Friendly/Menu Driven
Documentation/Cable Source/Warranty

Limited Time Offer

\$5000 per Package

HORIZON SOFTWARE INC.

Station Plaza East, Great Neck, NY 11021

(516) 829-3733

MCBA is a registered trademark of Mini Computer Business Applications, Inc. We over 11,000 sites using their software plugs.

Changing Computers?

Retain your SOFTWARE INVESTMENT

Dataware's conversion approach provides the solution to management's conversion problems and facilitates the recovery of the initial capital investment in systems development.

- COBOL to COBOL
- AUTOCODER/SPS to COBOL
- EASYCODER/TRAN to COBOL
- BAL/ALC to COBOL
- DOS/ALC to OS/ALC
- PL/1 to COBOL
- RPG/RPG II to COBOL
- RPG/RPG II to PL/1

Faced with Conversion?
Call or write today

The Conversion Software People

Dataware, Inc.

2565 Elmwood Avenue
Buffalo, New York 14217
Phone (716) 876-8722
TELEX: 91519



Specializing in
IBM System/38
FRIEDMAN & ASSOCIATES, INC.
• Word processing
• Database systems
• Data entry systems
• Data communications
• Data security
(312) 448-7100

Totally on line order entry
complete manufacturing systems
With no on-line net charge
• Fixed price software
• Including customizing
• Management consulting
• In your experience
We make it work!

PDP-11 & VAX Software

EasyEntry
Quick form design
and data entry system

AIS-PU
ANSI Subset G
PL/I Compiler

BURCOM-1
PDP-11/Burroughs
Communications System

1-800-334-5510

Applied information systems

500 Eastowne, #207
Chapel Hill, NC 27514
(919) 942-7801



Elegant Software

for IBM S/34 & S/38

General Accounting
Financial Reporting
Accounts Receivable
Accounts Payable
Order Processing
Inventory Management
Sales Analysis
Job Cost

J. D. Edwards & Company

4949 S. Syracuse Street/Suite 5500
Denver, CO 80237
303/ 773 3732

Payroll/Personnel
Property & Equipment
Report Writer
Oil & Gas
All Systems are:
RPG II/RPG III
Data Base
Interactive

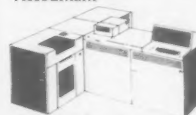
Dallas — 214/ 458 0636
Northern California — 415/ 697 7754
Southern California — 714/ 751 5302

Financial Planning, General Ledger Reporting System for IBM SYSTEM/38

call:
Interactive Program Products Inc.
800 Second Avenue
New York, NY 10017
(212) 752-5252
In Chicago (312) 693-6300
In Houston (713) 960-1315



Designed specifically
for the
IBM System/38
and the Management
Accountant



A comprehensive
General Ledger,
Financial Reporting
and Budgeting System

DHDial Company

Financial Accounting
and Reporting Systems

Murray Financial Center
5550 LBJ Freeway, LB-1
Dallas, Texas 75240
(214) 458-0987

TIME & SERVICES

Computer & Memory Repairs

Any Manufacturer's Memories
CORE.....SEMI

DEC®—DATA GENERAL
Complete CPU'S and Memories

THREE DELTA CORP.

1038 Kiel Court, Sunnyvale, CA 94086
(408) 734-2680 TWX 910-339-9511

time and services

time and services

time and services

Depot Memory Repairs \$145

- Most Manufacturers at this Price
 - 6 - 10 Day Turnaround
 - 90 Day Warranty
 - Core Repairs Included
 - Even Lower Flat Fees
- Available for OEM's,
Repair Labs and Manufacturers
- Hundreds of Satisfied Customers
 - Worldwide • 9 Years of Service

ALSO

- POWER SUPPLY REPAIRS
- DEC • DG BOARD REPAIR

ANY

MANUFACTURER
ALL MODELS

TOLL

FREE

1-800-327-8662



DIGITAL DATA SYSTEMS, INC.

1551 N.W. 65th Avenue, Plantation, FL 33313
305-792-3290 Telex 232-005 Attn: DIGITAL

FAST TURNAROUND ON REPAIR SERVICES

Computer Boards
Memories/Peripherals
Power Supplies

All Manufacturers

Real Cost Savings

Flat Rate Contracts Available

Emergency Repair

24 Hrs. 212-741-3800

NEW YORK

REPAIR DEPOT INC.

22 West 23rd St., N.Y., N.Y. 10010

TIMESHARING VAX 11/780-VMS

- FORTRAN Graphics
- BASIC Author Programs
- COBOL Custom Software
- DATATRIEVE Hydrology Softw.
- Telenet Access Petroleum Softw.
- Floating Point Accelerator Low Rates
- Interactive Batch
- Direct Dial Detailed Resource Acctg.

Volume Discounts

7-Day, 24 Hour Service

Contact: Richard Santoro
In-Situ Inc.

209 Grand Ave.

Laramie, WY 82070

(307) 742-8213

COMPUTER TIME FOR SALE

On

IBM 4341-L10

- VM/CMS
- OS/VS1
- In-Site or Remote

ICCS

10 East 21st Street
New York, NY
Contact Ray Rauth
for Rate Sheet
(212) 557-0998

Timesharing PRIME

- FORTRAN • COBOL
 - BASIC V • RPG II
- (Virtual Basic)

BLOCK TIME
ARRANGEMENTS
AVAILABLECONTACT: Dolores Kwain
The Functionality Group Inc.
180 North Michigan Avenue
Chicago, Illinois 60601
1-800-621-9155
312-372-6070 in Illinois

Computer Services

4341-2 370/158-3

VS1-CICS-ROSCOE-DOS

REMOTE JOB ENTRY
CICS DEVELOPMENT
CICS PRODUCTION
CUSTOMIZED SOFTWARECONTACT JOE BARRETT
(201) 777-345415 MINUTES FROM LINCOLN TUNNEL
ONE PASSAIC STREET
WOOD RIDGE, N.J. 07075

COMPUTER TIME FOR SALE

I.B.M. 360-40

All Shifts, 128K, 4-2401
MOD-2, 9-2314, 1403-N1,
2540,

From \$35/Hour

Restaurant Associates, Inc.
1540 Broadway
New York, N.Y. 10036
Contact
At Palm (212) 997-1411

VAX AND RSTS/E DEVELOPMENT TIME

NO Kilocore Tick Charges - NO CPU Charges

\$7/\$14

RSTS/E VAX
PER HOUR
CONNECT TIMEBUDGET
BYTES
212-
944-9230by **Omni**computer.TM
1430 Broadway, New York, N.Y. 10018

Do you want GOOD FIELD ENGINEERS?

TYMSHARE TECHNICAL INSTITUTE
provides quality training
for beginning to advanced
computer field engineers.

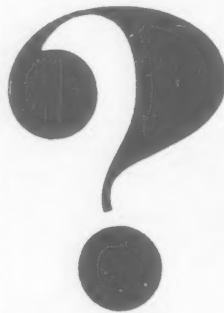
We train on:

- VAX-11/780 • KL10
- PDP-11/70 • KI10
- PDP-11/34 • KS10

PLUS a long list of
associated peripheral devices.For information, course descriptions, schedules,
call or write:

TYMSHARE
TECHNICAL INSTITUTE
30100 Liberty Avenue
Fremont, CA 94538
(415) 794-2416

CURIOUS ABOUT CLASSIFIED?



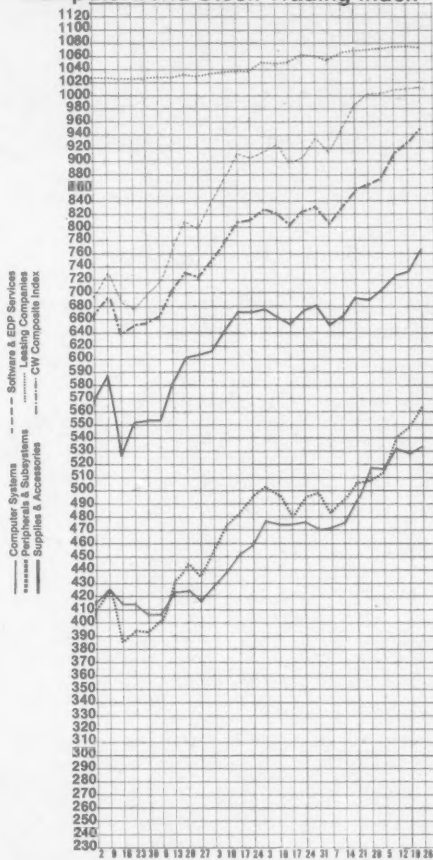
If you are interested in advertising with **Computerworld**, but don't know how to do it, give us a call! We will be glad to send you our current rate card, which explains sizes, costs, deadlines and requirements. Along with that, we can send a demo paper which actually shows examples of ad sizes, typefaces, and prices. All you have to do is ask! Our toll free number is 800-343-6474, in Massachusetts call (617)879-0700, just ask for the Classified Advertising Department. Or, you can look for our classified order form located in the classified section of **Computerworld**. Fill it out, attach your ad with a check, and return it to us. **Computerworld Classified Advertising**, 375 Cochituate Rd., Box 880, Framingham, MA 01701. We're anxious to help!

ADVERTISERS INDEX

American Bell.....	54-55
Amer-Cal.....	12
American Key Data.....	75
Applied Data Research.....	4,49
Applied Tech Associates.....	68
BASF.....	29
BDS Computer Corp.....	26
BGS Systems.....	24
Boettcher & Co.....	33
M. Bryce & Assoc.....	28
Cincom.....	18-19
Cipher Data.....	23
Comdesign.....	25
Commercial Programming Services.....	46
Computer Management Research.....	20
Context Mgmt. Systems.....	22
Cord Cable Co.....	52
Core & Code.....	60
CW-EMCE.....	72-73
CW-Supplement.....	76
Data General.....	14,64-65
Data South.....	42
Digital Equipment Corp./	
—Educational.....	10-11
Digital Equipment Corp./	
—TPC.....	62
Decision Point '83.....	74
D.J.C. Corp.....	52
ESPN.....	75
Fusion Products.....	42
General Research Corp.....	25
GMS.....	48
Graham Magnetics.....	37
GTE Telenet.....	66
Hambrecht & Quist.....	34
IBM.....	21
IBM-ISC.....	30-31,50-51
Infodata Systems.....	9
Innovation Data Processing.....	7
Innovative Electronics.....	33
J. W. Lampl.....	60
Lee Data.....	61
Local Data.....	58
MA/Com Alanthus.....	20
M & F Case Co.....	70
M & G Software.....	74
MicroFrame.....	56
MicroAge.....	24
Micro-Mainframe.....	58
Mini Computer Business Appl.....	36
Modern Management.....	69
MSA.....	100
MTI Systems Corp.....	13,15,17
National Computer Equipment Corp.....	56
National CSS.....	32,46
NEC.....	56
Northern Telecom.....	70-71
Omni Offices.....	61
Pace Applied Tech.....	47
Phillips Info. Sys.....	60
Prestige Expo.....	41
Professional Software.....	13
Reiter Software Systems.....	30
Rogue River Software.....	71
SAS Institute.....	43
SDM.....	17
Signal Tech.....	52
Software AG.....	49
Sperry Univac.....	57
Syncoart.....	3
Sysed.....	58
Techtran.....	6
Teletype Corp.....	30-39
Terminal Brokers.....	28
Term-Tronics.....	40
Tone Software.....	34
USENIX.....	48
U.S. Postal Service.....	16
U.S. Robotics.....	13
Vertex Systems, Inc.....	31
VM-CMS.....	26
Wang Laboratories.....	27
Westinghouse.....	8,68
Whitesmith LTD.....	69
Yorndon.....	5

This index is provided as an additional service. The publisher does not assume any liability for errors or omissions.

Computerworld Stock Trading Index



Computerworld Sales Offices

Vice-President/Sales/Donald E. Fagan
COMPUTERWORLD, 375 Cochituate Road, Box 880,
 Framingham, MA 01701
 (617) 879-0700

BOSTON SALES OFFICE (617) 879-0700
Northern Regional Manager/Chris Lee
Sr. District Manager/Ed Marecki, Jr.
District Managers/Jo Fitzhugh, Jim McClure
Sales Assistant/Kathy Doyle
COMPUTERWORLD, 375 Cochituate Road, Box 880,
 Framingham, MA 01701

CHICAGO SALES OFFICE (312) 827-4433
District Managers/Arthur Kossack,
H. Newton Barrett, III
Sales Assistant/Jean F. Broderick
COMPUTERWORLD, 2600 South River Road, Suite 304,
 Des Plaines, IL 60018

NEW YORK SALES OFFICE (201) 967-1350
Eastern Regional Manager/Mike Masters
Sr. District Manager/Doug Cheney
District Managers/Ray Corbin, Joan Daly
Account Executive/Fred Lo Sapio
Sales Assistant/Gale M. Paterno
COMPUTERWORLD, Paramus Plaza I,
 140 Route 17, North, Paramus, NY 07652

LOS ANGELES SALES OFFICE (714) 556-6480
Regional Manager/Jim Richardson
District Manager/Bob Hubbard
COMPUTERWORLD, 18008 Sky Park Circle, Suite 260,
 Irvine, CA 92714

SAN FRANCISCO SALES OFFICE (415) 421-7330
Western Regional Manager/William J. Healey
Account Managers/Barry Milione, A.G. Germano,
Theodora Franson
Account Manager, Classified/Eileen Dunn
COMPUTERWORLD, 300 Broadway, Suite 20,
 San Francisco, CA 94133

ATLANTA SALES OFFICE (404) 394-0758
District Manager/Jeffrey Melnick
Eastern Regional Manager/Michael Masters
COMPUTERWORLD, 1853 Peeler Road, Suite D, Atlanta,
 GA 30338

CLASSIFIED ADVERTISING (617) 879-0700
Al DeMille, Bill Cadigan
COMPUTERWORLD, 375 Cochituate Road, Box 880,
 Framingham, MA 01701

For foreign sales offices, see masthead
 on Page 2.

CW COMMUNICATIONS/INC.

Board Chairman/Publisher

Patrick J. McGovern

President

W. Walter Boyd

Senior Vice-President

Lee Vidmar

Group VP-Communication Services, Jack Edmonston. Group VP-Circulation, Margaret Phelan.
 VP-Marketing, Roy Enns. VP-Sales, Donald E. Fagan. VP-Finance, William P. Murphy.
 VP-Editorial, John Whitmarsh. VP-Special Publications, Robert Ziegler.

Computerworld Headquarters: 375 Cochituate Road, P.O. Box 880, Framingham, MA 01701
 Phone: (617) 879-0700, Telex: 95-1153.

SALES Vice-President, Donald E. Fagan. Corporate Advertising Administrator, Frank
 Collins. Display Advertising Supervisor, Anne Hadley.
 Display Advertising, Tracey Eastman, Pam Valentines, Laura Kentley, Alice Longley.
 Classified Advertising Manager, William J. Mills.

COMMUNICATION SERVICES Group Vice-President, Jack Edmonston. Director Research, Kathryn Dinnen.
 Sales Promotion Manager, Noreen Kimball.

PRODUCTION Production Director, Peter Holm. Production Manager, Marlene Stibal.
 Supervisor, Trish Gaudette. Systems Manager, Tom Plau.
 Typesetting Manager, Carol Polack. Art Director, Tom Monahan.

CIRCULATION Group Vice-President, Margaret Phelan. Circulation Manager, Barbara Jeannotti.
 Service Representative, Peggy Kelly. Assistant, Carmela Priante.

Computerworld can be purchased on 35 mm microfilm through University Microfilms Int., Periodical Entry Dept., 300 Zeeb Rd., Ann Arbor, Mich.
 48106. Phone: (313) 781-4700. Computerworld is indexed: write to Circulation Dept. for subscription information.

All statistics compiled,
 computed and formatted
 by
 TRADE QUOTES, INC.
 Cambridge, Mass. 02139

Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, MAY 25, 1983

EX	1982-83	PRICE	WEEK	WEEK
C	RANGE	MAY 25	CHG	CHG
H	(1)	1983		
COMPUTER SYSTEMS				
A ARDAHL CORP	17-53	52 5/8	+2 3/8	+4.7
N BURROUGHS CORP	28-93	93 1/4	+2 3/8	+4.8
O COMPUTER AUTOMATION	7-17	14 3/8	+1 1/2	+11.6
N CONTROL DATA CORP	15-45	45	+2 1/4	+5.2
N CRAY RESEARCH INC	21-38	38	+4 1/8	+7.5
N DATA GENERAL CORP	20-73	61 1/8	+3 5/8	+6.3
N DATAPoint CORP	11-38	22 1/4	+1 3/4	+8.5
N DIGITAL EQUIPMENT	82-122	113 3/8	+1 1/8	+0.1
A EECO INC	8-14	13 7/8	-1/4	-1.7
N ELECTRONIC ASSOC.	5-12	11	+1/4	+2.3
N FLOATING POINT SYST	18-38	37 1/8	+7/8	+2.4
N FOXBORO	22-43	38 1/4	-1/4	-0.8
O FILCORP CORP	1-3	1 1/4	0	0.0
O GENERAL AUTOMATION	3-13	13 1/4	+2 1/8	+19.1
N HARRIS CORP	20-31	44 1/2	+1 1/4	+2.8
N HEMLETT-PACKARD CO	36-87	86 3/8	+3 1/4	+3.8
N HONEYWELL INC	80-124	121 7/8	+4 3/8	+3.7
N IBM	57-118	115 5/8	+3 7/8	+3.4
O IPL SYSTEMS INC	5-11	8 1/4	+1/2	+5.7
J MAGNACOM CORP	2-9	3	0	0.0
O MAGNACOM ASSIST	7-18	13	-1/8	0.0
O MINI-COMPUTER SYST	1-2	1 7/8	0	0.0
N MODULAR COMPUTER SYST	8-15	14	-1/8	-0.8
N MODAM DATA SCI	10-18	15	-3/8	-5.4
N NEC	38-125	124 1/4	+8 1/4	+5.2
N PERKIN-ELMER	17-23	30 3/8	+3 3/8	+12.5
N PRIME COMPUTER INC	18-43	31 3/4	+2	+6.7
N SPERRY CORP	21-38	37 7/8	+1 3/8	+3.7
O TANDEN COMPUTERS INC	14-34	32	+1/8	+0.3
N TEXAS INSTRUMENTS	71-176	158 1/4	+8 3/4	+5.8
A WANG LABS "A"	13-42	42	+2 5/8	+6.8
A WANG LABS "C"	11-42	42 1/4	+2 3/4	+6.9
LEASING COMPANIES				
O BOOTH FINANCIAL CP	22-45	43 1/2	-1/2	-1.1
N CORDISC INC	7-33	32 7/8	0	0.0
N COMMERCE GROUP CORP	1-1	1 1/4	0	0.0
O COMPUTER INVESTS GRP	1-2	1 1/2	0	0.0
O CONTINENTAL INFO SYS	3-24	21 3/4	-3/4	-3.3
N DPE INC	5-14	13 3/8	-3/8	-5.7
O ITEL	1-3	1 1/8	0	0.0
O LEASAPAC CORP	1-2	1 1/8	0	0.0
N U.S. LEASING	18-47	46 1/4	+1/2	+1.1
SOFTWARE & EDP SERVICES				
O ADVANCED CORP TECH	1-8	5 1/2	+1/2	+10.0
O ADVANCED SYSTEMS INC	9-28	27	-1	-3.5
O ADS COMPUTERS INC	7-28	28 1/4	+2	+8.6
O AMERICAN SOFTWARE	22-30	30 1/4	+3	+11.0
N ANACORP INC	8-23	17 7/8	-1 1/2	-7.7
O ANALYSTS INTL CORP	5-14	13 1/4	-1/4	-1.8
A APPLIED DATA RES.	8-38	35 1/2	+2 1/2	+7.5
O ASK COMPUTER SYSTEMS	12-38	34 7/8	+1 3/8	+4.1
B ASTRAVINE CORP INC	6-31	28 1/4	+1 1/2	+1.7
N AUTOMATIC DATA PROC	21-42	38 1/2	+1 1/8	+0.3
O COA COMPUTER ASSOC	3-15	14 3/4	+3/4	+5.3
O COMPUTER ASSOC INT'L	6-31	28 1/4	+1 1/2	+1.7
O COMPUTER HORIZONS	8-22	22	-1/2	-13.7
O COMPUTER NETWORKS	4-10	9 3/8	-3/8	-3.8
N COMPUTER SCIENCES	11-23	17 3/4	-3/4	-4.0
O COMPUTER TASK GROUP	8-22	22 1/4	0	0.0
O COMPUTER USAGE	2-22	18 1/2	+1 1/2	+8.8
O COMPUKING SYSTEMS	13-38	18 1/4	-3/4	-3.9
O COMSERV CORP	10-20	18 1/4	+2	+14.0
O COMWARE	8-13	11	+3/8	+2.5
N CULLINET SOFTWARE	12-45	44 3/4	+3 1/4	+7.8
O CYCARE SYSTEMS INC	9-27	25 3/4	0	0.0
O DATA DIMENSIONS INC	1-2	3/4	0	0.0
O DATAWARE	0-2	3/4	0	0.0
O DYATON CORP	2-4	3 1/8	-5/8	-18.6
N ELECTRONIC DATA SYST	18-86	86 1/4	+1	+1.5
N INFORMATICS INC	10-34	33 3/4	+2	+6.2
O INSEYE CORP	1-3	1 3/4	+1/8	+7.6
O IPS COMPUTER MARKET	1-2	1 1/8	0	0.0
O KEANE ASSOCIATES	4-13	10 1/2	-1	-8.6
A LOGICON	12-38	37 1/8	-3/8	-1.0
O MGT SCI AMER INC	8-31	29 3/4	0	0.0
O MATHEMATICA INC	12-28	28 3/4	0	0.0
O MATHEMATICAL APP CORP	12-22	18 1/2	-1/4	-1.3
O NATIONAL DATA CORP	3-28	24 1/4	+3/8	+2.6
O PARADOX SYSTEMS	8-27	26 3/4	+1 1/2	+5.9
N PLANNING RESEARCH	8-21	20 1/2	+1 1/2	+7.8
O POLICY MGMT SYST CS	8-22	20 7/8	+3/4	+5.7
O PROGRAMING & SYS	1-3	4 5/8	+1 3/8	+42.3
O REYNOLDS & REYNOLD	17-48	42	0	0.0
O SEI CORP	11-34	33	+1/2	+1.5
O SHARED RESEARCH	13-37	38 3/4	0	0.0
O SCIENTIFIC COMPUTERS	8-13	12	0	0.0
O SOFTWARE AG	5-17	11	+1 1/2	+15.7
N TYNDEN INC	12-38	24	+7/8	+3.7
A URS CORP	3-14	13 1/2	-1/8	-0.8
N MYL CORP	7-18	18	+1 7/8	+13.2
PERIPHERALS & SUBSYSTEMS				
P AR INTERNATIONAL	2-7	8 1/2	+3/8	+6.1
A ANDERSON JACOBSON	8-25	19 1/4	-1/2	-2.7
O AUTO-TROL TECHNOLOGY	8-21	18	-1/2	-2.7
O BANCITE INC	7-33	18 1/4	0	0.0
A BENTIVE INT'L	4-13	12 1/4	-1 1/8	-8.1
O BOLT, BERANEK & NEW	13-69	68 5/8	+8 1/4	+13.8
O CARBEX CORP	2-4	1 7/8	0	0.0
N CENTRONICS DATA CORP	8-22	20 7/8	+5/8	+3.0
A CETEC CORP	4-10	8 3/4	0	0.0
O CONTINENTALS	2-14	12 7/8	+3/8	+3.0
O COMPUTER COMMUN.	1-2	1 3/4	0	0.0
SUPPLIES & ACCESSORIES				
N AMERICAN BUS PRODS	11-27	29 3/4	+1 1/8	+4.5
O BALTIMORE BUS FORMS	1-2	3/4	0	0.0
N BARRY WRIGHT	13-27	27	+3/4	+2.8
O CYBERNETICS INC	1-1	1 1/4	0	0.0
A DUPLEX PRODUCTS INC	12-26	24 1/8	-5/8	-2.5
N ENNIS BUS. FORMS	15-39	36 1/2	+1/8	+0.3
N FM COMPANY	48-87	87 1/4	+1 1/2	+1.7
N HODGE CORP LTD	28-51	50	-1	-1.9
N INGRAM CORP	3-20	14 1/4	+1 3/4	+18.4
O STANDARD REGISTER	32-103	102	-1	-0.8
N WALLACE BUS FORMS	11-28	25 3/8	-5/8	-2.4

EXCH: N=NEW YORK; A=AMERICAN; P=PACIFIC; B=BOSTON;
 L=NATIONAL; M=MIDWEST; O=OVER-THE-COUNTER
 D-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
 (1) TO NEAREST DOLLAR

15 pointed questions to ask MSA or any software supplier

These questions will help you when you sit down with individual software companies.

They're tough questions. Relevant ones. And any supplier who is worth his salt should be able to answer them without backpedaling.

Ask MSA

We'll answer all these questions to your satisfaction—plus any others you may have.

In fact, we're probably the best equipped to answer them. Because MSA is the software company. We offer the most complete line of totally integrated systems in the software industry, including financial, human resource and manufacturing.

So you avoid the headache of trying to tie together individual systems. (And the even bigger headache of adding to them.)

With MSA's integrated systems, there's no unnecessary duplication of data or effort. Reporting is faster. All your company's information is more timely and accurate—and in the right form.

Our technical edge comes from experience

Staying ahead is easier for a company that's steeped in software technology. MSA has spent years developing, refining, testing and enhancing our systems.

This year alone, we'll invest \$25 million to make sure all our systems are technologically razor sharp. That gives us a decided advantage over flash-in-the-pan technology that may not have the bug-free logic of a more experienced system.

It also gives you a decided advantage over "custom" systems you have to update yourself.

MSA relieves you of that time-consuming burden. We update and enhance your software for a full year. Then we continue this service for a surprisingly low annual fee.

Maintenance includes keeping your system up-to-date technologically. Enhancing it with new features that make it work even harder for you.

And making sure it reflects changes in accounting procedures and government regulations, including 401(k), TEFRA, and FAS52. (That

eliminates a lot of tedious work you normally have to do.)

Save this box. It can help you make an intelligent software decision.

1. Can you offer us a complete range of software systems designed to work together?

Or will we have to piece together a patchwork of systems?

2. Are your systems just record keepers, or can they really help us make decisions?

Can we pull together information from any of our integrated systems? In exactly the form we want it?

3. Can you provide business software for both mainframe and microcomputers?

Do you develop this software yourself or do you simply market it for another company?

4. Are your systems truly online? So all of our information is current?

How many of your systems are online? How secure are they?

5. Will my company have to be the one that discovers the bugs in your brand new system?

Just how long have your systems actually been used, and how have they been tested?

6. Will you update your systems as technology advances and regulations change?

What are some of your most recent updates? Will you keep us current on regulatory changes?

7. Do your systems really do everything you say they will?

Or will we have to change them or add to them to get the features we want?

8. How long have you been in business?

What are your revenues? What is your growth record? Where will your company be five years from now?

9. How many systems has your company installed?

How many of these were installed in the past six months? How many of your earlier customers are still using—and liking—your systems?

10. Do your financial systems handle unlimited foreign currencies?

Do your financial systems use a common set of currency exchange rates?

11. Can you link our executives' computers directly to the mainframe—so they can get their own information?

Is that software available right now?

12. How will you make sure our own people thoroughly understand your system?

Do you have educational centers near us, or will we have to travel all the way across the country to find one? Will you be there to help during installation and after?

13. How many of your people specialize in software for my industry?

How many accountants work for you? Human resource specialists? Manufacturing experts?

14. Do your systems have built-in features that make them easier to use?

What happens if someone needs help figuring out a feature? Do you have online documentation that's easy to understand?

15. As my business changes, will your system be flexible enough to change with it?

Or will we have to pay a lot to revamp it? Or even regenerate it?

35,000 days of training

At MSA, we make sure your people have a firm grasp of our systems. Last year alone, we conducted more than 35,000 student days of customer training for over 1,800 companies. At education centers all over the world, as well as at our headquarters.

From training sessions to cassettes to complete, easy-to-understand documentation, MSA provides the most extensive Customer Education Programs in the industry.

And MSA systems are just as friendly as our people. Our online HELP feature actually guides users through our systems, and EASY-SCREEN™ lets them design their own screens without creating data processing nightmares.

If there's ever a question or problem with our systems, MSA customers are always close to service.

Our Account Managers are knowledgeable, responsive, and backed by a complete team of industry specialists.

The heart of our integrated systems

It's MSA's General Ledger System. Combined with Accounts Payable/Purchase Order Control and our other systems, it gives your company complete control over your financial information.

Over 800 data processes

ing specialists, accountants, and financial experts work together to make MSA's financial systems the most advanced and most highly integrated in the industry.

MSA has the answers

Whatever your size—whatever your business—MSA has a total software solution.

We'll provide the highest quality integrated online software.

We'll tie your business and manufacturing software systems together, using our exclusive Extended Closed Loop™ manufacturing system.

We'll provide business software for your microcomputers, through our Peachtree Software Company.

We'll even link your microcomputers to your company's mainframe—with MSA's Executive Peachpak™ application

MSA ready-to-install applications software

1. General Ledger
2. Accounts Payable/Purchase Order Control
3. Budgetary Control/Encumbrance
4. Fixed Assets Accounting
5. Capital Expenditure Tracking
6. Forecasting & Modeling
7. Accounts Receivable
8. Foreign Exchange
9. Inventory & Purchasing
10. Payroll
11. Personnel Management & Reporting
12. ALLTAX™ Taxing System
13. ALLTAX Reporter™
14. Manufacturing Control System (MRP II)
15. Executive Peachpak™
16. Peachtree Software™ business systems for microcomputers
17. Peachtree Software™ office productivity systems for microcomputers

ALLTAX, ALLTAX Reporter, EASY-SCREEN, Executive Peachpak, Peachtree Software, and Extended Closed Loop are trademarks of Management Science America, Inc.

software. A revolutionary concept that lets executives get the mainframe information they need through their personal computers.

Talk to us

If we've whetted your appetite with our 15 questions, clip the coupon below.

We'll send you a concise booklet that will help you even more in your deliberations. We'd also like to send you more information on how MSA can help you plan for software. And on individual systems.

Just fill in the information below, or contact Robert Carpenter at (404) 239-2000.

Management Science America, Inc.
3445 Peachtree Road, N.E.
Atlanta, Georgia 30326.

- ☐ Please send me a free detailed brochure.
☐ Please send more information on the following systems. (Write numbers from product list)

Mainframe Computer Type/Model _____

Name _____

Title _____

Company _____

Address _____

City _____

State _____ Zip _____

Business Phone (____) _____

CW17a(5/30/83)

MSA

The Software Company

